DISASTER MANAGEMENT PLAN

GREATER HYDERABAD MUNCIPAL CORPORATION

1. INTRODUCTION

VISION

Making a resilient HYDERABAD where communities respond to disasters with sense of urgency and in a planned way to minimize human, property and environmental loss by developing a holistic, proactive, multi-disaster and technology driven strategy for DM. The entire process will center stage the community and will be provided momentum and sustenance through the collective efforts of all government agencies.

POLICY

Saving human lives with utmost priority and ensuring minimum loss to property and environment. Recognizing the commitment of stakeholders and the need for collaboration across all levels of government, community, industry, commerce, government owned corporations, private and volunteer organizations, and local communities in all aspects of disaster management. Emphasizing, building and maintaining sincere relationships, trust, teamwork, consultative decision-making and shared responsibilities among stakeholders.

OBJECTIVES OF THE PLAN

The aim of the DM plan is to ensure that the following components of DM are addressed to facilitate planning, preparedness, operational, coordination and community participation. The objectives guiding the policy formulation are:

1) To assess various hazard, vulnerability, capacity and risk associated with the District.
2) To lay down various measures and guidelines for prevention and mitigation.

3) To lay down preparedness measures for all stakeholders.
4) To build the capacity of all stakeholders in the state to cope with the disasters and promote community based disaster management.
5) To mainstream disaster management concerns into the developmental planning process.
6) To develop efficient, streamlined and rapid disaster response and relief mechanism in the GHMC.
7) To provide clarity on roles and responsibilities for all stakeholders concerned with various phases of disaster management.
8) To ensure co-ordination and promote productive partnership with all other agencies related to disaster management.
9) To commence recovery programme as an opportunity to build back better in case of a future disaster by incorporating community in the programme.

STRATEGY

Keeping in view the hazard risk profile of the district and its disaster history, HYDERABAD has the following prevention and mitigation strategy:

1) Creating Disaster Mitigation Fund.
2) Creating awareness for disaster risk reduction at all level.
3) Appropriate amendments in the legislative and regulatory instruments along with strengthening of the enforcement mechanisms at different levels.
4) Ensuring use of disaster resistant construction techniques, codes and guidelines in all sectors of the society by law and through incentives and disincentives.
5) Incorporating the study of disaster engineering subjects in architecture and Engineering curriculum.

SCOPE OF THE PLAN

The term "**DISASTER MANAGEMENT**" encompasses the complete realm of disaster-related activities. Traditionally people tend to think of disaster management only in terms of the post-disaster actions taken by relief and reconstruction officials; yet disaster

management covers a much broader scope, and many modern disaster managers may find themselves far more involved in pre-disaster activities than in post-disaster response. This is because many persons who work in the development field, or who plan routine economic, urban, regional or agricultural development projects, have disaster management responsibilities. For example, housing specialists planning a low-income housing project in a disaster-prone area have the opportunity (and an obligation) to mitigate the impact of a future disaster if the houses incorporate disaster resistant construction technologies.

It is mandate the Mainstreaming of Disaster Risk Reduction / Management into all the development projects, policy decisions and execution.

FINANCIAL RESOURCES FOR IMPLEMENTATION OF GHMC - DMP

GHMC should make financial allocations in preparing and executing the disaster management plan. The HoD, Finance, GHMC should plan for the following:

1) Funds for Prevention and Mitigation Activities
2) Funds for Preparedness and Training Activities
3) Funds for Response Activities (including pre-authorization to draw money from treasury in the event of an immediate emergency)
4) Funds for Disaster Risk Insurance

For the purpose of expediting services to its customers, GHMC will delegate special financial powers during an emergency to the officers dealing with disaster.

2. NATIONAL DISASTER MANAGEMENT STRUCTURE

The Disaster Management Act 2005 provides the legal and institutional framework for disaster management in India at the National, State and District level.

AGENCIES ROLES & RESPONSIBILITIES

NATIONAL DISASTER MANAGEMENT AUTHORITY (NDMA)

NDMA, as the apex body, is mandated to lay down the policies, plans and guidelines for Disaster Management to ensure timely and effective response to disasters. Towards this, it has the following responsibilities:-

1) Lay down policies on disaster management;
2) Approve the National Plan;
3) Approve plans prepared by the Ministries or Departments of the Government of India in accordance with the National Plan;
4) Lay down guidelines to be followed by the State Authorities in drawing up the State Plan;
5) 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;
6) Coordinate the enforcement and implementation of the policy and plans for disaster management;
7) Recommend provision of funds for the purpose of mitigation;

8) Provide such support to other countries affected by major disasters as may be determined by the Central Government;

9) Take such other measures for the prevention of disaster, or the mitigation, or preparedness and capacity building for dealing with threatening disaster situations or disasters as it may consider necessary;

10) Lay down broad policies and guidelines for the functioning of the National Institute of Disaster Management.

NATIONAL INSTITUTE OF DISASTER MANAGEMENT (NIDM)

1) The NIDM, in partnership with other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a national level information base.

2) It will network with other knowledge-based institutions and function within the broad policies and guidelines laid down by the NDMA.

3) It will organize training of trainers, DM officials and other stakeholders.

4) The NIDM will strive to emerge as a 'Centre of Excellence' in the field of Disaster Management.

NATIONAL DISASTER RESPONSE FORCE (NDRF)

NON-DISASTER PERIOD

1) Acquire and continually upgrade its own training and skills

2) Impart basic and operational level training toState Response Forces (Police, Civil Defense and Home Guards)

3) Assist in Community Training & Preparedness

4) Liaison, Reconnaissance, Rehearsals and Mock Drills.

IMPENDING DISASTER

1) Proactive deployment during impending disaster situations.

DURING DISASTER

1) Specialized Response.

STATE DISASTER MANAGEMENT AUTHORITY (SDMA)

According to the Disaster Management Act 2005 Section 14 each State mandates to establish State Disaster Management Authority (SDMA), which functions under the chairmanship of the Chief Minister. The SDMA has a clearly defined line of command and control.

Section 18: Powers and functions of State Authority.

1) Subject to the provisions of this Act, a State Authority shall have the responsibility for laying down policies and plans for disaster management in the State.

2) Without prejudice to the generality of provisions contained in sub-section (1), 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.

3) Approve the disaster management plans prepared by the departments of the Government of the State.

4) 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 therefore.

5) Coordinate the implementation of the State Plan.

6) Recommend provision of funds for mitigation and preparedness measures.

7) Review the development plans of the different departments of the State and ensure that prevention and mitigation measures are integrated therein.

8) 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.

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

STATE INSTITUTE OF DISASTER MANAGEMENT (SIDM)

1) The SIDM, in partnership with other research institutions has capacity development as one of its major responsibilities, along with training, research, documentation and development of a state level information base.

2) It will network with other knowledge-based institutions and function within the broad policies and guidelines laid down by the SDMA.

3) It will organize training of trainers, DM officials and other stakeholders.

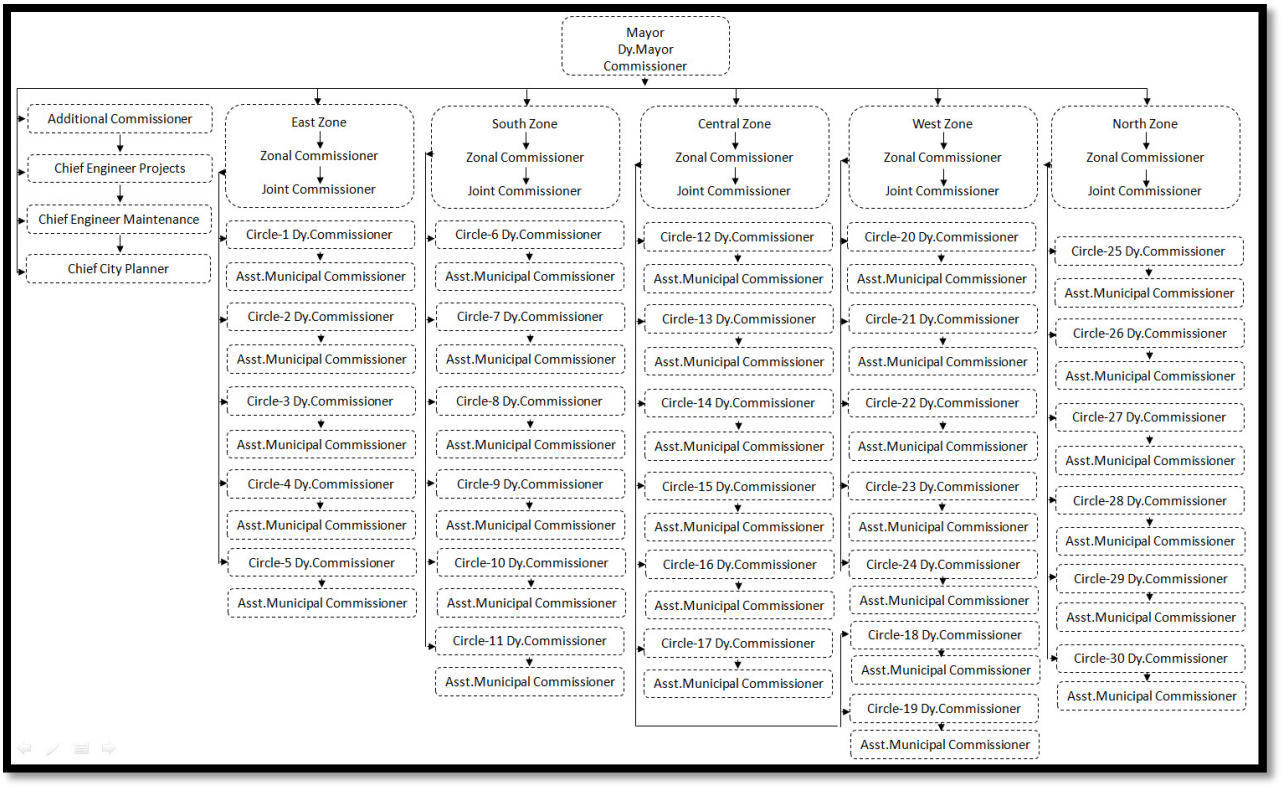
4) The SIDM will strive to emerge as a 'Centre of Excellence' in the field of Disaster Management.

3. GHMC PROFILE

3.1 HAZARD, RISK & VULNERABILITY ASSESSMENT

3.2 PAST OCCURRENCES OF DISASTERS

4. INSTITUTIONAL STRUCTURE



DISASTER MANAGEMENT DIRECTORATE STRUCTURE

To be developed

DIRECTOR

1) TECHNICAL & COMMUNICATION
2) EXECUTION
3) VIGILANCE
4) FINANCIAL

5. PREVENTION AND MITIGATION MEASURES

MITIGATION:

Disaster Preparedness needs to be followed by disaster mitigation, which is essential for providing long-term succor to the victims of disasters. Mitigation involves all actions to reduce the effects of disaster –causing phenomena. Mitigation involves all actions to reduce the impact of a disaster that can be taken prior to its occurrence, including preparedness and long-term risk reduction measures. It also includes the planning implementation of measures to reduce the risks of human-made hazards, and the process of planning for effective response to disasters. Disaster mitigation includes scientific analysis of risk assessment, social, economic, legal and technical process in the application of these measures.

PRINCIPALS OF DISASTER MITIGATION:

1) Creating awareness of risk at community level
2) Promoting local actions through community participation to reduce such risks Assisting decision makers to understand the nature and extent of various risks faced by communities
3) Pre-disaster mitigation helps ensure fast recovery of a community from the economic and other impacts of a disaster.
4) Hazard reduction measures should take into account the various hazards faced by the community, including technological hazards.
5) Mitigation measures should protect natural and cultural resources of the community.
6) Mitigation is the effort to reduce loss of life and property by lessening the impact of disasters.
7) The magnitude of damage wreaked by natural disasters can be reduced considerably by adopting the twin strategies of “culture of prevention” and “Spirit of Cooperation” through awareness, knowledge, training and proper use of new technologies.
8) Greater Hyderabad municipal corporation has adopted both mitigation and prevention components for disaster management.

5.1 DISASTER MITIGATION MEASURES

5.1.1 EARTHQUAKE

A comprehensive programme has been taken up for earthquake mitigation. The Bureau of Indian Standards (BIS) has laid down the standards for construction in the seismic zones; these are not being adhered to. The building construction in urban and suburban areas is regulated by the Town and Country Planning Acts and building regulations. In many cases, the building regulations do not incorporate the BIS codes. Even where they do, the lack of knowledge regarding seismically safe construction among the architects and engineers as well as awareness regarding their vulnerability among the population has resulted in most of the construction in the urban / suburban areas being done without reference to BIS standards. The increasing population has led to Settlements in vulnerable areas close to the riverbed areas, which are prone to liquefaction. Earthquake mitigation requires engineered structures to withstand seismic forces, compliance to building codes, regulations, appropriate location planning, land-use regulations.

In case of earthquakes, it is not yet possible to make forecasts about the impending event. Therefore, there can be no warning. Thus to ensure the earthquake risk mitigation, it is necessary to prepare the community for:

1) Hazard resistant construction or retrofitting of building / houses to reduce the vulnerability of the structures
2) Proper land use planning to avoid potentially high hazard zone; and
3) Community preparedness through awareness generation, mutual assistance, and adherence to a set of Do's and Don'ts.

It is poorly built structures, not earthquakes that kill people. It is a well-known fact that most earthquake related deaths and financial losses are due to the structural collapse of houses and other buildings and structures. The impact of an earthquake on a structure is greatly influenced By the building material used, design of the building and techniques employed for construction.

The best way to cope with the problem of earthquakes is to build earthquake resistant buildings and infrastructure and to prepare earthquake mitigation plans to take care of every stage of earthquake management. The following Do's and Don'ts, if observed before, during and after an earthquake, will definitely help in mitigation of the consequences of An earthquake disaster.

STRUCTURAL MITIGATION MEASURES

TASK	ACTIVITIES	RESPOSNSIBILITIES
Micro Zonation	1) Undertake micro zonation study according to priority area 2) Provide or make available seismic micro zonation map 3) Provide vulnerability and risk assessment map	1) SDMA 2) Town planning Dept. GHMC 3) Engineering Dept., GHMC 4) NGRI
Earthquake Resistance Design for Different Earthquake Zones	1. Develop earthquake resistant design features for the construction of public utility structures 2. Develop earthquake resistant design features for the construction of residential structures 3. Provide earthquake resistant design for incorporating in different types of structures of the line departments	1. Engineering Dept.;(Projects, GHMC) 2. Town planning Dept.,,GHMC
Retrofitting of Existing Structure	1. Create a database of existing structure (both public and private) in the district. 2. Identify the available resources 3. Identify structures that require retrofitting 4. Prepare a scheme/programme for retrofitting	1. . Engineering Dept., GHMC 2. SDMA 4. Town planning Dept.,GHMC

	5. Identification and removal of unsafe buildings/structure	

NON STRUCTURAL MITIGATION MEASURES:

Task	Activities	Resposnsibilities
Monitoring of Seismic Activities	1. Establish seismological network and round the clock monitoring 2. Dissemination of information and reporting 3. Conduct seismological research	1. IMD, Hyderabad 2. SDMA, Telangana 3. GIS, GHMC 4. Town planning Dept.,GHMC
Capacity Building	1) Ensure earthquake related departmental action plan and SOP 2) Include earthquake engineering topics in curriculum 3) Provide professional training about earthquake resistance construction to engineers and architects 4) Provide training to masons. 5) Encourage soil and material testing in laboratories	1. SDMA 3. Town planning Dept.,GHMC
Safety Audit	Carry out structural safety audit of all critical lifeline structures	1.SDMA 2. Engineering dept.(GHMC) 3. Town planning Dept.,GHMC

Awareness	1. Disseminate earthquake risk to general public residing in earthquake prone zones 2. Campaign for Earthquake safety tips	1. SDMA 2. Revenue Depts.,(Collectors) 3. Town planning Dept.,GHMC

5.1.2 URBAN FLOODS:

Floods are extreme events, usually triggered by extreme precipitation (river/inland floods)and/or storms (coastal floods). If these rainfalls exceed the retention capacity of the basins, drainage speed and volume, it causes floods.

DIFFERENT TYPES OF FLOODING ARE EVIDENT IN HYDERABAD:

1) localized flooding due to inadequate drainage;
2) flooding due to overflows from musi River, where settlements have taken place in the flood plains.
3) Localized flooding occurs mainly due to informal settlements in the drain path, improper drainage network, reduction in drain capacity due to siltation.
4) Land use practices, solid waste management practices and drainage maintenance in the city have influenced and exacerbated the flood hazard.

Various approaches are available to deal with floods and to mitigate their adverse impact. As each situation is different, different approaches or their combination is adopted. Basically,these approaches fall under the following three categories:

Modification of floods would involve measures such as weather modification (if possible),catchment and land use modification, physical control works such as reservoirs and embankments. Modification of the susceptibility of the people would involve flood

forecasting, warning, flood proofing and flood plain management. Modifying the loss burden is possible through evacuation, pumping out water, avoidance of epidemics, flood insurance and compensation.

Modification of the hazard is possible through structural and non-structural measures.

Task	**Activities**	**Responsibility**
Structural Measures		
Construction	1. Improve design for storm water drains and flood protective structures 2 Strengthen /repair of existing roadsand bridges and other critical infrastructure in flood plains.	1. SDMA 2. Engineering dept.(GHMC) 3.Revenue depts.(Collectors) 4. Town planning dept.(GHMC)
Flood Plain Zoning	1. Demarcation of areas liable to floods on large scale maps 2. Demarcation of areas likely to be inundated for different flood frequencies	1. SDMA 2. Town planning dept.(GHMC) 3.Engineering dept.(GHMC)
Development of Catchment area	1. Develop catchment area of the floodplain □□Land sloping □□Small reservoirs / Check dams /ponds etc	1. SDMA 2. Town planning dept.(GHMC) 3. Engineering dept.(GHMC)

Flood Proofing	1. Implement specific building by laws for buildings and structures in the flood plains	1. SDMA 2. . Town planning dept.(GHMC)
Forecasting	1. Strengthen and upgrade existing flood forecasting system 2. Establish infrastructure for flood warning and dissemination.	1. IMD, Hyderabad 2. disaster management, GHMC
Non-Structural Measures		
Capacity Building	1. Prepare departmental flood contingency plan 2. Develop flood related departmentalaction plan and SOP 3. Impart training to the stakeholders involved in flood mitigation and management	1. SDMA 2. Disaster management, GHMC 3. Revenue depts.(Collectors) 4. . Town planning dept.(GHMC)
Awareness	1. Disseminate flood risk warnings to general public residing in flood prone zones	1. SDMA 2. Disaster management, GHMC 3. . Town planning dept.(GHMC)
Safety Audit	1. Carry out structural safety audit of all critical lifeline structures	1. SDMA 2. Engineering dept.(GHMC)

		3. Town planning dept.(GHMC)

5.1.3 EPIDEMICS

An epidemic is the rapid spread of infectious disease to a large number of people in a given population within a short period of time, usually two weeks or less.

Greater Hyderabad municipal corporation is the Lead Agency for monitoring and control of epidemics in post monsoon times.

MITIGATION EFFORTS FOR CONTROL OF EPIDEMICS WOULD INCLUDE

1) Surveillance and warning
2) Preventive and promotive measures
3) Strengthening institutional infrastructure.

Task	Activities	Responsibility
Structural mitigation measures		
Surveillance and warning	1. Identify the epidemic prone areas 2. Establish mechanism for regular monitoring of such locations 3. Set up testing laboratories with trained man power if required 4. Collect data and disseminate to concerned authorities	1. Health & sanitation dept.(CMOH/ AMOHs), GHMC 2. Entomology wing, GHMC 3. UCD Dept(GHMC) 4. Town planning Dept(GHMC)
Preventive and	1. Ensure clean drinking water, personal toilets and proper	1.HMWS& SB

Promotive Measures	sanitation facilities in epidemic prone areas. 2. Ensure safe drainage and proper waste management system	2. solid waste management cell, GHMC
Strengthening Institutional Infrastructure	1. Organize capacity building trainings for health staff 2. Establish testing labs with modern equipment and trained manpower	1. Entomology wing, GHMC 2. Health and sanitation dept, GHMC
Non structural preventive measures:		
Capacity Building Activities	1. Identify the primary stakeholders of current epidemic 2. Organize epidemic management trainings for all stakeholders 3. Provide necessary safety devices to health staff who manage and work in epidemic area	1. Entomology wing, GHMC 2. Health and sanitation dept, GHMC
Awareness Program	1. Organize public campaigns to aware them on what to do and what not do to control the epidemic. 2. Use both electronic and print media to disseminate the safety measures and the actions government taken to check the epidemic	1. Entomology wing, GHMC 2. Health and sanitation dept, GHMC

The following measures for preventing the health risk arising out of a disaster:

- Research and epidemiological studies
- Immunization and vaccination
- Proper food and nutrition
- Maintenance of hygiene and sanitation
- Adequate system of garbage disposal
- Vector Control
- Well laid down system of education, training and simulation exercises
- Mitigation Plans
- Media Campaigns
- Sustainable development
- People's involvement

Mitigation plans should integrate the following points:

- Creating awareness of health risk at community level
- Promote local actions through community participation to reduce such risk
- Assist decision makers (Politicians and administrators) to understand the nature and extent of various risks faced by the communities in their areof responsibility, and to assess the economic conditions through proper decision making and planning.
- Introduce effective measures to implement disaster mitigation plans at different levels of public administration based on risk assessment and vulnerability analysis.

With such a mitigation strategy, it becomes possible to reduce the adverse health consequences. The local community, the governmental bodies, and other agencies working

in the area of disaster management can assess the causes, severity and elements of risks pertaining in their areas. This will enable them to take appropriate health preparedness measures. NGOs and disaster management agencies should conduct training programmes of the public health workers and volunteers in the community. As far as possible, population should be trained for multi-purpose activities. Formal training can be given through modular courses by NGOs or other agencies.

5.1.4 ROAD, RAIL ACCIDENTS:

Roads and Railways are the principal mode of transport for both passengers and goods in the city. The safety of railway operations is becoming all the more imperative in view of railway endeavor to lift more passengers and freight traffic. Accordingly, high priority is being given to various safety measures to ensure greater safety in rail travel. Factors contributing to occurrence of Rail Disasters are:

- Heavy Rain
- Cyclone / Flash Floods
- Human Failures
- Equipment Failures
- Non-observance of section of 131 of Motor Vehicle Act, 1988 by road users leading to unmanned railway level crossing accidents
- Sabotage
- Tampering with Track

In areas prone to natural disasters, like cyclone and floods, Railways adopt measures to tackle problems. Weather warning is received through the meteorological department and is relayed.The track is patrolled on foot and the condition of track, bridges are observed, and special watch is kept at vulnerable locations.

the road fatalities involving pedestrians and bicyclists are on the increase due to the spiralingincrease in number of vehicles clogging the roads. Road accidents are caused by the negligence ofthe drivers, lack of proper road sense in the public and also by use of vehicles which are fully roadworthy.

The mitigation strategy therefore assumes that enforcement of Motor vehicle Act will precede themeasures suggested:

Task	Activities	Responsibility
Structural Mitigation Measures		
Strengthening Road Infrastructure	1. filling potholes, patchworks and recarpeting works regularly 1. Make provision for special enforcement wing 2. Set up traffic posts and trauma carecenters 3. Set up hotlines and speed monitoring technology 4. Keep equipments for removal of accident vehicles 5. Fix a lead agency for monitoring 6. Make provision of special route for hazardous vehicles	1. Engineering dept.(GHMC) 2. traffic police dept. 3. Vigilance and enforcement wing , GHMC
Strengthening Institutional	1. Avoid parking on no parking zones.	1. traffic police dept.

Capability	2. Show excavation locations with barricades 3. Put road dividers, speed breakers, information sign boards 4. Keep machines for removal of debris in emergency	2. Engineering dept.(GHMC)
Improving Regulations	1. Insurance regulation 2. Strictly use protective materials by two wheeler drivers 3. Training for drivers carrying hazardous materials 4. Use blinking lights for stationary vehicles	1. traffic police dept. 2.Vigilance and enforcement wing , GHMC

Strengthening Institutional Capability & Road Infrastructure:

1. Assess the problem, policies and institutional settings relating to road traffic injury and the capacity for road traffic injury prevention

2. Improve the deteriorated stretches of roads in Asphalt or Concrete

3. Maintain the roads in motorable condition

4. Prescribe Regular lines for the existing roads & road lines for new proposed roads.

5. Maintain existing roads

6. Provide & maintain Road Dividers, Signals, delineation etc. (Road safety devices) in

consultation with Traffic Police & Wards Offices.

7. Provide & maintain streetlights on roads through the B.E.S.T., Reliance Energy & M.S.E.B. in consultation with Traffic Police & Ward Offices.

8. Prescribe Road widening based on traffic studies & new road lines for proposed new roads.

9. Parking of vehicles in "No Parking Zone" strictly prohibited

10. Formulate & implement pay & park schemes in consultation with Traffic Police & Ward

Offices.

11. Construct flyovers, FOB & subways.

12. The speed breakers and tipplers must have standard designs.

Improving Regulations:

1. 1. Insurance claims should be linked with compliance of all regulations related to vehicles and

transport restrictions.

2. Prepare a road safety strategy and plan of action.

3. Allocate financial and human resources to address the problem.

4. Implement specific actions to prevent road traffic crashes, minimize injuries and their

consequences and evaluate the impact of these actions.

5.1.5 FIRES

Fire loss is national loss because what burns never returns. Amongst all hazards, fire and fire related accidents carry a high degree of fire risk and pose a greater problem.

There are many cause of fire in the GHMC such as accidents, electrical short-circuit, carelessness, gas leaks, mishandling of flammable chemicals and products, etc. Further, GHMC being highly industrialized district there is increased threat of fire incidents. Fire causes huge losses of life and property every year.

Task	Activities	Responsibility
Structural Measures		
Develop Fire Infrastructure and other fire facilities	1. Strengthen coordination between Fire agencies and other stakeholders 2. Equip fire stations with modern fire engines and other equipment 3. Provide fire proof devices to fire fighters 4. Insurance coverage for fire staff 5. Make provision for special fire burn ward in the hospitals 6. Robust communication system for Fire control room and it's Regional fire stations	1. fire prevention and response wing, GHMC 2. state fire dept.
Non-Structural Measures		
Capacity Building	1. Provide regular training to the fire staff in using and maintaining the equipment 2. Organize regular demo for fire brigade to familiar them with fire	1. fire prevention and response wing, GHMC 2. state fire dept

	equipments 3. Conduct mock drills to check up the departmental preparedness	
Awareness Generation	1. Organize awareness programmes on fire safety in schools, colleges and offices 2. Disseminate fire safety tips among public through print and electronic media 3. Develop IEC materials on dos and don'ts for public distribution 4. Organize training program for NGOs, NSS, NCC students.	1.Disaster management , GHMC 2. fire prevention and response wing, GHMC

History it is found that fire is a frequently occurring hazard in Hyderabad, and many fires occur because of the lack of awareness on the part of occupants such as using temporary and low quality electric gas fixtures / lines, faulty electrical equipment etc.

To avoid fire accidents as a part of mitigation strategy, efforts should be made to

1. Strict regulations on the quality of electric and gas lines and fixtures especially for commercial and institutional buildings.

2. Shopkeepers may not be allowed individual generators in case of multi-story commercial

buildings, instead, owners may be asked to arrange central generator, preferably placed outside the building in a generator room.

3. Building approving authorities should have a mechanism to inspect the adequacy of active fire safety measures before approving it to be fit for use.

4. There should be no relaxation on the provisions of standard fire safety measures for commercial and institutional buildings as these are highly vulnerable to fires and generally house many people at on time.

5. There is an urgent need to develop fire safety guidelines and educate public, building owners, designer and government agencies regarding the damaging effects of fire and importance of including fire safety in the design of important buildings.

6. Computerized data management system should be introduced to keep the record of all fires including frequency, extent, fatality, economic losses etc.

7. Special burns wards should be established in every civil hospital and in the hospitals near the industrial estates.

8. Equipping fire services with robust communication facilities

9. The roles and responsibilities of administration, police, fire services and medical services should be clearly laid down.

5.16 INDUSTRIAL AND CHEMICAL ACCIDENTS

Major Chemical (Industrial) disasters are low in frequency but are very significant in the terms of loss of lives, injuries, environmental impact and property damage. Frequency and severity of chemical disasters has increased in last few years due to rapid development of chemical and petrochemical industries and increase in size of plants, storage and carriers, specifically in densely populated areas.

Task	Activities	Responsibility
Structural Measures		
Industrial Safety Measures	1. Strengthen Mutual Aid Response Group (MARG)	1. SDMA 2. Town planning Dept(GHMC)

	2. Form and strengthen the Crisis Groups at local levels 3. Develop on-site and Off-site Plans 4. Set up toxic water treatment facility 5. Set up leakage checkup devices 6. Purchase, store and keep functional all necessary Industrial safety equipment 7. Make provision for poison ward in GHMC & Govt Hospitals	3. Industries dept., GHMC
Emergency Planning	1. Prepare / update emergency onsite and offsite plan 2. Regular monitoring of safety activities in all the factories / industries	1. Revenue dept
Awareness Activities	1. Organize community awareness programmes for the communities residing near the factories and let people know dos and don'ts in case of industrial disaster 2. Develop IEC material in local language and distribute them in schools and local communities 3. Organize school level awareness	1. SDMA

	activities and ensure students participation in large number	

Following aspects should be include in DM Plan

- Awareness among workers and the people likely to be affected
- Procedure for warning
- Immediate action to be taken
- Specific responsibilities of officials and their training
- Plan for casualty evacuation and medical aid
- Fire fighting arrangements
- Command, Control and Communication System
- List of specialists, personnel, and organisations who could provide assistance.
- Practice drills

5.1.7 Community efforts in Mitigation Measures

Any mitigation policy and activity need to be accompanied by community participation. The communities are the first to respond when disaster strikes. Since they are familiar with the local area vulnerabilities, available resources, facilities, demography, the community need to be assisted with disaster mitigation plans. Public Administration and citizens have to work in unison, as existence of one without the other is not possible in a civilsed society. The harmonious relationship depends upon the sincerity, earnestness and cooperation between the two. There is need to

- Encourage people's participation for development and modernization
- Kindle the potential energy of the citizens in to kinetic energy to accelerate development

- Supplement the efforts of the government in the conduct of its affairs
- Strengthen the values of democracy in the minds and spirit of the people
- Enlist respect in the Constitution, which is rooted in people's sovereignty

Empowerment of community:

The community needs to be empowered for coping with disasters. Disasters are situations that need mobilization of capabilities and capacities of local population. It is also known that the local communities have an active part to play before and after disaster because:

- A good state of preparedness before a disaster strikes may reduce its impact.
- More number of lives can be saved during the first few hours after a disaster has occurred, before help arrives from elsewhere**.**
- The numerous problems of survival and health resulting from a disaster are dealt with more efficiently, if the community is active and well organized.

5.1.7 DISASTER PREPAREDNESS

CAPACITY BUILDING / TRAINING PROGRAMMES

CONCEPT & SIGNIFICANCE

Disaster involve in two key elements namely, the event and people vulnerable to it, preparedness assumes significance, to strengthen the abilities, capacities to predict and wherever feasible, prevent disaster, lessen the impact, facilitate response, and handle the consequence of disaster at various levels. Disaster preparedness is a multifaceted activity. It has to pay attention to economic, social, political, technological and psychological variable.

PREPAREDNESS STRATEGY HAS TO AIM:

- Developing awareness amongst the people to be alert and responsive to impending disasters.
- Reducing the vulnerability of community in disaster-prone areas and enhancing their ability to cope with them.
- Strengthening the institutional mechanism and capacities of government at several levels, non-governmental organizations (NGOs), Communities in disaster preparedness, relief, response and rehabilitation activities.
- Building networks between several organizations including government, NGOs, private organizations, community, and other key stakeholders to foster preparedness efforts.

Principles:

- Perceptions should be studied and opportunities created for people to modify their perceptions where necessary
- Create strategies to rouse the curiosity of the individual and encourage a general desire for change.
- Individuals and communities should be helped to compare the existing ways with

proposed innovations, relate innovations to the basic needs and overcome barriers to acceptance

Adopt educations methods that have a heavy emphasis on community involvement and participation.

Group approval influences adoption of new behavior pattern.

Behavior is motivated. Motivation is the inner drive the propels human beings towards attaining a desired goal.

Developing and institutionalizing disaster preparedness plan which comprehensive, indicating the roles and responsibilities of several stakeholder before, during and after occurrence of disasters.

Strengthening warning systems and meteorological studies

Evolving appropriate Information Education and Communication (IEC) activities for community

Keeping ready Rapid Response Teams, Search and Rescue personnel along with Emergency Medical Teams

Setting up safe havens

Putting in place emergency evacuation procedures

Making available relief activities including emergency shelters, medical, food aid servicers, and security arrangements.

Assessing the damage after the occurrence and restoring transport, power and communication systems.

SDMA suggested following disaster management activities under preparedness

measures

o Update resources inventory

o Review and update the DM Plans

o Develop DM policy, guideline and plan

o Establishment of EOC and early warning system

o Formation of DM Committees and task forces

o Organise capacity building trainings

o Purchase / repair the search and rescue materials and critical supplies

o Identify disaster prone areas and complete the HRVA study

o Prepare the hazard maps

o Organize community based DM trainings, orientations and awareness activities

o Make fund provision for disaster response, mitigation and relief works

o Implement all preventive and mitigation activities in disaster prone areas

o Conduct mock drills

o Mainstreaming of DM in development programmes / projects / scheme

o Develop coordination and net working with various stakeholders

5.3 Community –Based Disaster Management

The Community has an important role, their coping mechanisms are undervalued. But in case of any disaster, the responsibility of community and local authority is much more in

setting goals, devising rehabilitation programmes, managing recovery and developing priorities. Its need to recognize the community as a key resource in disaster management, Communities and victims are a resource because:

They are knowledgeable about disasters happening in their own environment and are sometimes able to forecast them

They are rich in experience of coping, both in preparedness and in emergencies. Their coping methods – practiced over time and derived from their own experience suit the local government best.

1.3.1 CBDM in Pre-disaster Phase

Orienting the community towards the nature and effects of the disasters to which they are vulnerable

Taking stock of the resources of the community such as schools, primary health centers, cyclone shelters, communication facilities, road and other infrastructure and skilled individuals

Assessing the risks and vulnerabilities of the community. The various elements at risk thatinclude the physical structures, as well as the vulnerable section of the community such as women, children, physically challenges, old etc. need to be examined so that the preparedness measures are appropriately planned.

Formulating preparedness plan at the community level, that takes into cognizance the community needs, measures to be taken by the community before, during and after the disaster strikes, resources available at various places, clear allocation of responsibilities

amongst all concerned officials, departments, NGOs, CBOs.

□□Specifying the role of community in handling the disaster.

1.3.2 CBDM During Disaster

□□Organising Search, Rescue and Evacuation activities. This includes identifying the disaster victims, bringing them to safer places, provision of first aid, distribution of relief, adhering to evacuation plan etc.

□□Shelter for people as well as livestock. This includes arrangements for water supply,

sanitation, kitchens, fodder for animals, medical services and first aid etc.

□□Clearing of debris from collapsed buildings, bridges, trees other structures, re-establishing of transport and communication facilities.

□□Moving of injured to the nearby health centers and hospitals

□□Disposing of dead humans in order to contain the spread of disease in another important task. Identification of dead bodies, compliance with police formalities, mobilizing resources for disposal of bodies in accordance with religious and cultural practices, are activities which involve the community. Disposal of dead animals is important as it has effect on health and environment

□□Assessing damages immediately on the occurrence of disaster facilitates quick emergency relief. This is to be done with reference to the number of households population, livestock, area affected etc.

1.3.3 CBDM in Post-Disaster Phase

□□Undertaking a detailed damage assessment covering verified number of human lives,

identification of live victims as well as the dead, livestock, infrastructure and the estimated value.

□□Drawing up a comprehensive economic rehabilitation plan that includes restoration activity through necessary inputs.

□□Building an appropriate monitoring and evaluation mechanism in community based disaster preparedness programme.

Capacity Building Trainings and Other Proactive Measures

COURSE CONTENT	TO WHOM	RESPONSIBLE AGENCIES
1. Impart training to prepare disaster management plan for their respective depts 2. IEC Activities to bring awareness in mass public 3. Conduct on site and off site mock drills 4. Communication and coordination with other depts. 5. Adopt the advanced information and communication technologies in early warning dissemination and emergency management situations 6. Advanced research works with regard to community based	Govt. staff(**Engineers, Hospital Staff, Schools ,Colleges, Community, Security Personals, Corporate, Control Rooms,**)	SDMA Disaster Management, GHMC All line depts

disaster management to be taken up and the research outputs should be applied in practical field.		

7. DISASTER RESPONSE

Emergency Operations Center

The purpose of the Emergency Operations Center is to:

Provide a central location, with communications capabilities, for key GHMC Department Heads and Emergency Support Function Liaisons to gather as a central coordinated body.

These liaisons, officials, and decision makers present will be able to make decisions on the spot under the guidance of Responsible Officer (Director, Disaster Management, GHMC) and will be able to assist the RO in achieving the incident objectives. The RO will also ensure that the line departments do not issueparallel and contradictory instructions to their field level officers.

□□Demonstrate that the GHMC Government is in charge, and ensure a coordinated decision making process;

□□Provide for information exchange and documentation about the ongoing disaster;

□□Set incident objectives (operational priorities) for response at the GHMC level and Ward level;

□□Collect damage information and needs assessment for the District Disaster Relief Committee and State Emergency Operations Center;

□□Provide for a media location and media briefings with the GHMC “speaking with one voice”; and

□□Manage logistics and resources for required response operations, and to track disaster finances.

The EOC will take stock of the emerging situation and assist the Responsible Officer in mobilizing the respective line department's resources, manpower and expertise along with appropriate delegated authorities for the on-scene response teams. EOC will keep the Responsible Officer informed of the changing situation and support extended.

Communication and Alert Regarding Opening of the GHMC Emergency Operations Center

Announcements that the GHMC Emergency Operations Center has been opened for incident monitoring and response will be provided to the public through all available systems.

Communication, Alert and Warning

Communication, Alert and Warning will be provided to the public through all available systems.

Warning information will only be used from the following official Warning Nodal Agencies. Nodal Agencies for Early Warning are as follows:

Disaster Agencies

Earthquake	IMD, NGRI, GIS
Floods	IMD, GHMC
Cyclones	IMD
Epidemics	HEALTH& SANITATION DEPT, GHMC
Road Accidents	Police
Fires	State fire dept, Police

Responsibilities of the Chief of the Emergency Operations Center & Command Staff Positions at the EOC(Director, Disaster Management, GHMC)

The Chief of the EOC, or Responsible Officer(Director, Disaster Management, GHMC) is overall in charge of disaster response and the operations of the Emergency Operations Center.

In addition, the Chief of the EOC will manage the Information & Media, Safety, and Liaison Functions. The main function of the Command Staff(D) is to assist the Chief of the Emergency Operations Center or RO in the discharge of his functions. These Command Staff positions are shown in the EOC Organization Chart, as shaded or green color, in Figure below.

The Information and Media Officer (IMO) is responsible for: Advising Chief of Emergency Operations on information dissemination and media relations. The IMO Obtains information from and provides information to community and media.

RECONSTRUCTION AND REHABILITATION

Activities relating to rehabilitation and reconstruction are primarily carried out by GHMC and various Government departments and boards.

RECONSTRUCTION STRATEGY

Depending on the type of damage and population affected, measures can be initiated as comprehensive recovery strategy. While the short term reconstruction strategy includes repair, restoration and strengthening of affected structures, long term strategy includes reconstruction and relocation.

DETAILED DAMAGE AND NEED ASSESSMENT

While a preliminary damage assessment is carried out during disaster phase, a detailed assessment must be conducted before commencing reconstruction and rehabilitation activities. The primary objective of any post–disaster damage assessment and need analysis is to provide a clear, concise picture of post disaster situation, to identify damage caused to different sector and to develop strategies for rehabilitation, reconstruction and recovery. The relevant GHMC/ State Government departments and other authorities shall initiate

detailed assessment at their respective level for damages sustained in their respective departments and jurisdiction in the affected regions. For assessing the damage and need of the affected community, the damage and need assessment team should be a composite representation of all the different communities and groups in the affected area. An ideal team would include expert in the related field, government official and representatives from majority and minority communities, females, Scheduled Caste and Tribes, panchayat member or nagarpalika member, etc.

Two essential aspects of reconstruction are:

a. Owner Driven Reconstruction

Reconstruction should be done on the principle of Owner Driven Reconstruction. Here the GHMC administration aids in provision of funds and technical expertise for construction activity. The principle allows active participation of the affected family/ owner in rebuilding their houses and ensures that their houses suit their cultural, occupational and other personal needs and context.

It also gives them a sense of ownership and change their mindset from ‘being a beneficiary’ to ‘being am owner’ which also aids in psychological rehabilitation.

The active participation of the owner also ensures regular monitoring of the process, quality of material used, etc. which helps in speeding up the reconstruction process.

b. Build Back Better

Reconstruction post disaster also gives an opportunity to build back better. The new construction post disaster should comply of all safety norms, guidelines and building codes. The design of these buildings should be disaster resilient as per the hazard profile of the area into consideration. GHMC shall monitor the reconstruction process and ensure that the principle of build back better is followed through disaster resilient reconstruction.

Rehabilitation

Holistic rehabilitation post disaster includes many inter linked aspects. It is critical to address all need of affected population in order to achieve early recovery and to bring back normalcy to their lives.

a) Socio-economic Rehabilitation

Socio-economic rehabilitation is aimed at revamping the social and economic fabric to the pre-disaster or a better situation. It also addresses issues like that of livelihood restoration and generation. This is done by providing required training, skill, tools and equipment to restart the previous or new livelihood options. Care should also be taken to address the needs of various socially and economically vulnerable groups like that of women, adolescent girls, old age persons, differently able persons, children, destitute, below poverty line population, scheduled castes, scheduled tribes, particularly vulnerable tribal groups, etc.

b) Psychological Rehabilitation

Disasters often lead to long time stress and trauma due to loss of near and dear ones, injuries, loss of limbs, loss of housing and related property, trauma generated by facing the disaster and fearful sites, fear of repetition of the disaster, etc. If not addressed appropriately, it may lead to lifelong psychological fear and disorders, thus it is necessary to provide psycho-social first and psychological care to the affected population.

c) Environmental Rehabilitation

Environmental impacts of natural disasters can result in serious risk to life and livelihoods if not addressed. Environmental emergencies like uncontrolled, unplanned or accidental release of a substance into the environment not only impact human life in many ways but also damage environment to great extent which may be impossible or may take years to restore to original. Without proper consideration of the environment, pre-existing vulnerabilities may be re-created or exacerbated. Thus GHMC along with other stake hoders should ensure measures to decontaminate the affected elements like air, river, water bodies, forests, etc.

INFORMATION, EDUCATION AND COMMUNICATION

Communication activities are necessary to convey to the larger community the scope and nature of the proposed reconstruction and rehabilitation effort so as to increase the stakeholder awareness and buy-in for the ongoing activities. Hence, GHMC / State Government department shall undertake:

- Ongoing media management/Public Relations: To ensure accurate communication of the reconstruction and rehabilitation measures being taken to various stakeholders;
- Community management: This includes communicating to the affected communities with a view to appraising them of efforts being made for their relocation/ rehabilitation/ reconstruction;
- Feedback mechanisms: Using the communication network to get feedback on reconstruction and rehabilitation measures.

MAINSTREAMING OF DISASTER RISK REUDUCTION INTO THE DEVELOPMENT PLAN

Mainstreaming DRR in Development Programs / Projects / Schemes

Mainstreaming Disaster Risk Reduction (DRR) means that risk reduction becomes a particle of all partners involved in development work by institutionalizing the process in planning and implementation and in policies.

Disaster risk reduction (DRR) is a systematic approach to identifying, assessing and reducing the risks of disaster. It aims to reduce socio-economic vulnerabilities to disaster as well as dealing with the environmental and other hazards that trigger them: it has been strongly influenced by the mass of research on vulnerability that has appeared in print since the mid-1970s.It is the responsibility of development and relief agencies alike. It should be an integral part of the way such organizations do their work, not an add-on or one-off action. DRR is very wide-ranging: Its scope is much broader and deeper than conventional emergency management. There is potential for DRR initiatives in just about every sector of development and humanitarian work.

The basis of the GHMC Disaster Management Plan is a collaborative planning process that incorporated a synergistic, holistic approach to disaster risk reduction and response for Hyderabad. This approach allowed the development of the GHMC Disaster Management Plan, or the operating environment in which Hyderabad responds to disaster.

'Win-win' solutions for securing sustainable development, reducing poverty and strengthening hazard resilience, need to be explicitly and actively sought, particularly as climate change looks set to increase the incidence of droughts and floods and the intensity of windstorms. Solutions are best derived by integrating disaster risk reduction strategies and measures within the overall development framework, viewing disaster risk reduction as an integral component of the development process rather than as an end in its own right.

Hazard-related issues need to be considered in national and sectoral development planning, country programming and in the design of all development projects in hazard-prone countries, seeking both to protect the development investments themselves against natural hazards and to strengthen the hazard resilience of the communities they serve. Hazard-proofing individual structures may not even cost much. . As such, due

consideration of disaster risks may represent an important aspect of international efforts to enhance aid effectiveness.

Mainstreaming Issues with GHMC Departments

The issues of disaster mainstreaming which to be taken into consideration by concerned department are given below:

ACTIVITIES	CONCERNED DEPT.
1.To ensure the possible risks, likelihood and impact from disasters due to the location of project sites 2. To ensure whether probable risks have been prioritise and the mitigation measures being contemplated, both structural &nonstructural measures 3.To ensure the design and engineering of the structure has taken into consideration the National Building Code 200, The appropriate BIS, other applicable sources such as NDMA 4.Impact assessment of project (Damage that can be caused to the project by natural disasters, design of the project that could accentuate the vulnerability of the area to disasters and or lead to rise in damage / loss of lives, property, livelihood, and surrounding environment. 5.Impact of the project on the environment and the surrounding population with respect to the type of the project and adoption of	1.Engineering dept(GHMC) 2.Town planning dept(GHMC) 3. state pollution control board 4. all related depts. To the particular project.

mitigation measures to reduce the impact of the same	

DISASTER MANAGEMENT ACTION PLAN

1. Urban Flooding

URBAN FLOODING – A DRAFT DISASTER MANAGEMENT PLAN

INDEX

URBAN FLOOD MANAGEMENT

INTRODUCTION

Flooding is a natural event; the water cycle is a balanced system. Water flowing into one part of the cycle (like streams) is balanced by water flowing back to the sea. Sometimes, however the amount flowing into one area is greater than the capacity of the system to hold

it within natural confines. The result is a flood, which occurs when the amount of water arriving on land (from rainfall, snow melt, surface flow, flow in watercourses or inundation by the sea) exceeds the capacity of the land or drainage-system to discharge that water. It can occur on any location but mainly occurs on land adjacent to watercourses (fluvial flood plains) or low laying areas.

Increasing trend of urban flooding is a universal phenomenon and poses a great challenge to urban planners the world over. Urban floods will happen in a relatively short period of time and can inundate an area with several feet of water. Although volume of water to be handled is not as severe as a flash flood of a river system the property damages and indirect financial losses are significant as surface water runoff is controlled and managed by humans in a concrete world as this flooding occurs in highly populated areas. As the Environment Agency sustainable development Unit said in June 2001: “Major floods that have only happened before say, every 100 years on average, may now start to happen every 10 or 20 years. The flood season may become longer and there will be flooding in places where there has never been any before”. Urban flooding is significantly different from rural flooding as urbanisation leads to developed catchments which increases the flood peaks from 1.8 to 8 times and flood volumes by up to 6 times. Consequently, flooding occurs very quickly due to faster flow times, sometimes in a matter of minutes. Urban areas are centres of economic activities with vital infrastructure which needs to be protected 24x7. In urban areas, water must follow the prescribed pathways set forth by large water systems that direct water where to flow. According to FEMA, the basic philosophy of urban drainage systems, or "storm water management", for redirecting water flow has been to seek maximum convenience at an individual site by the most rapid possible elimination of excess surface water after a rainfall and the containment and disposal of that water as quickly as possible through a closed/ Open conveyance system. In other words, "get that water out of here NOW" has been the overlying philosophy of creating drainage systems in urban areas.

Types of Flooding

Flooding can be divided into different categories according to their duration:

1. Slow-Onset Floods

Slow-Onset Floods usually last for a relatively longer period, it may last for one or more weeks, or even months. As this kind of flood last for a long period, it can lead to lose of stock, damage to agricultural products, roads and rail links.

2. Rapid-Onset Floods

Rapid-Onset Floods last for a relatively shorter period, they usually last for one or two days only. Although this kind of flood lasts for a shorter period, it can cause more damages and pose a greater risk to life and property as people usually have less time to take preventative action during rapid-onset floods.

3. Flash Floods

Flash Floods may occur within minutes or a few hours after heavy rainfall, tropical storm, failure of dams or levees or releases of ice jams. And it causes the greatest damages to society.

Flooding can also be divided into different categories according to their location:

1. Coastal Floods

Coastal Floods usually occur along coastal areas. When there are hurricanes and tropical storms which will produce heavy rains, or giant tidal waves created by volcanoes or earthquakes, ocean water may be driven onto the coastal areas and cause coastal floods.

2. Arroyos Floods

A arroyo is river which is normally dry. When there are storms approaching these areas, fast-moving river will normally form along the gully and cause damages.

3. River Floods

This is the most common type of flooding. When the actual amount of river flow is larger than the amount that the channel can hold, river will overflow its banks and flood the areas alongside the river. And this may cause by reasons like snow melt or heavy spring rain.

4. Urban Floods

In most of the urban area, roads are usually paved. With heavy rain, the large amount of rain water cannot be absorbed into the ground and leads to urban floods.

Among various kinds of disasters, flooding is unique in the sense that it has a very high degree of predictability, both in the short term, as well as long term. In most situations, flood prone areas are quite known – in the sense that they have a history of flooding. Only in very rare situations, a place might be flooded – without having any past history of flooding. Even in such cases, a careful study of the area could give an indication of possible flooding.

Flood Prone Areas

The areas, which are prone to flood-risks, are:

 places, which have a history of flooding

Low-lying areas

 Areas receiving heavy rainfall, with not much naturally sloping landscape

 areas at the lower levels of naturally sloping landscape – where, the higher areas are receiving heavy rainfall

 areas with in the FTL limits of tanks/ponds/lakes.

 areas downstream of Tanks. As water level upstream of Tanks/lakes/ponds might rise, the authorities might be forced to release water (to safeguard the Tanks/lakes/ponds) – which might cause flooding of downstream areas

Loss due to Flooding

The most common kinds of loss that are caused during flooding include:

Lack of water: Its an irony, that a disaster which mean water everywhere, results in lack of water to drink and sanitation. Lack of proper drinking water and sanitation causes widespread outbreak of diseases.

Lack of food: Most of the food items get damaged, causing a severe shortage of food. This shortage could be for the food to be consumed in the near future, or, even standing crops could be damaged causing long-term food shortage.

Lack of utilities: Utility services might have to be turned off, for the fear of electrocution, as, there is water everywhere.

Widespread damage to structure

Drowning: People, livestock, goods etc. might get drowned.

Snakes and other creatures: Some of the dangerous creatures which usually stay underground would be forced to come up, as their natural habitat becomes unlivable. These could prove dangerous to human beings and cattle.

Submerging of vehicles and other equipment's: Vehicles and other equipment's might get permanently damaged – as they remain submerged under water – for prolonged duration. Because of wide-spread impact of such floods, the suffering could be long-drawn, besides the immediate impact – as mentioned above.

Major Causes of Urban Floods

Urban floods are caused by natural events and anthropogenic activities. In Indian cities flooding is becoming frequent due to both human factors and meteorological/hydrological factors, with the former factor being more predominant. Some of the issues contributing to urban floods are listed below:

1) **Planning issues:** Increasing population, habitations coming up in low-lying areas, encroachment on drainage channels and immediate upper catchment of hilly urban areas.

2) **Technical issues:** Increased imperviousness leading to increased runoff as compared to drainage capacity, improper waste disposal resulting in clogged drains, high intensity – high load of runoff.

3) **Meteorological issues:** Exacerbated by changing climate, resulting in extreme events, NASA studies indicate that the urban heat island effect also results in High intensity rainfall over urban areas.

4) **Policy issues:** Lack of integrated flood control implementing agency

The following could be additional contributing factors to flooding impacts,

a. Building developments in floodplains, where they are vulnerable to flood hazards;

b. Built development in catchments and other changes in land use, that increase the rate and volume of runoff in a catchment;

c. Sediment movement changing river cross-sections and affecting flood levels

d. Lack of maintenance of flood defence systems, watercourses, culverts (including flood storage areas around them) and road gullies, particularly where this leads to channel blockage.

e. Canalization, modification and diversion of rivers and watercourses, which increase the rate of flow and decrease the time taken for water to travel within a catchment

f. The building of structures e.g. (embankments), which restrict flows over historical flood plains and thereby create additional flood risks both upstream and downstream.

g. Land management practices that increase blockages of hydraulic structures.

Impacts - flooding in urban areas affects more than one sector

1) Traffic jams
2) Damage to public and private property
3) Mixing of solid waste in flood waters causing further choking of drains
4) Vector and water borne diseases
5) Incessant rains causing Nala overflow/breaching of tanks which causes inundation of low lying areas.
6) Disruption of power supply and telecommunication.
7) Mixing of faecal matter in the flood water due to open defecation.

Measures to Mitigate/Eliminate Urban Flooding

An integrated approach combining watershed and land use management with development planning, engineering measures, flood preparedness, and emergency management should be adopted for controlling urban floods. Three aspects viz. flood avoidance, flood tolerance and flood resilience should be addressed in an integrated way for flood management in cities**.**

1) Planned and proper construction of drainage network separately for storm water and sewer.
2) Regular maintenance of storm water drains.
3) Use of porous construction material for pavements.

4) Putting in place water sensitive infrastructure.

5) Taking drainage basin as the base for city master plans.

6) Protecting lakes/water bodies from encroachments and clearing existing encroachments by the departments/agencies concerned.

7) Rejuvenating water bodies back to their original state.

8) Training programs should be organised for staff involved in operation and administration to enable them to take action as per the operating procedures.

9) Sensitization programs should be organised for public on flood related aspects.

10) Damage assessment should be done in vulnerable areas and sufficient funds should be allocated for flood prevention related works . This will help in reducing the recurring expenditure for the same damages every year.

11) General clean-up of streets is also important. As rain-water falls down the street, it rushes into the storm drains. if the streets are not clean, the rain water trying to go into the drain – carries solid wastes into the drain with itself, which then obstructs the flow of water by the drainage system.

12) Rain water harvesting system: As more rain-water tries to flow down the drains, it puts that much more stress on the drainage system. Instead, if there are several rain-water harvesting systems, the rainfall falling in that much area would try to go to the sub-soil of the region locally, rather than straining the drainage system. Lower is the amount of water trying to go through the drainage system, the easier it is for the drainage system to drain off the water.

13) Desilting: The drains should be desilted before the onset of the rainy season. This prevents the drains from getting choked. And, it also increases the holding capacity of the drain, as, accumulated silt prevents that much more water from being accumulated in the drains.

14) Afforestation: Forestation helps in binding the loose soil. The most major impact of this is, as flood-water races through, it might take loose soil with it. This loose soil will now choke the drains, as well as water-harvesting systems, thus, rendering both of these as ineffective. On the other hand, trees will prevent soil to flow with the water, as, the roots of the trees will act as binding force. Another major impact that afforestation provides is by reducing the impact of flowing water. This has impact on large-scale flooding, such as overflowing river. As water charges forward, its speed is reduced to some extent due to resistance offered by trees. This can reduce the force of the charging water – thereby, reducing structural damage – due to weakening in the force with which water hits various structures.

15) Local lowlands should have storm drains, so that water does not get accumulated there. These drains should have some kind of mesh covering, so that only water can flow in. Leaves and other solid debris should not go in these drains.

16) Local embankments around low-lying houses etc: Lets say, for some reason, your house is at a level lower than its vicinity (e.g. road-level). This can happen, because, say: you have constructed a basement – which is obviously lower than the road-level, or, over a period of years, the road-level has risen due to repeated tarring etc. In such cases, you should create a "local" embankment between the street/road and your property, so that water can not flow "down" from the street/road inside your house. These embankment might be permanent – in the form of concrete structure.

17) Conversion of flood-prone areas into wetlands, where, urbanization is not allowed, i.e. one cannot construct residential houses, or, any other permanent structures etc.

18) Documentation - Activities undertaken by government agencies for controlling and managing floods should be documented and publicized in all forms of media.

19) Stopping illegal construction: Public should be educated on the risks involved in illegal constructions on or along drains and water bodies. Vulnerable areas should be cleared of habitations. Government should consider relocation of the poor to other areas.

20) Institutional arrangements - A unified flood control implementing agency needs to be in place.

Being Prepared – Community Preparedness

People who stay in flood-prone areas should construct their houses using material which does not get damaged severely due to flood-water. Also, since, there is a strong risk of structural damage (for large-scale flooding), the material used to construct the house should be such that it can withstand high impact – due to the charge of flowing water. One should prefer areas, which are slightly elevated. These could be local elevations, i.e. higher parts of the city etc. There should be strong embankments along all entrances of the houses – so that flood water does not enter the house easily.

Cement bags, covered with plastic sheets might be used to keep the flood water from entering the houses.

Besides, long boots should always be kept, so that one does not run the risk of being bitten by snakes and/or other insects that might also be trying to save themselves from the twirling flood-waters.

One should keep arrangements for raising the height of items, which might get damaged in water, e.g. put a few pieces of bricks below the legs of the furniture, such as bed etc. to raise its height. Important document should always be kept on higher shelves.

As water, food and utilities would not be available – and that too – for possibly several days, one should also take measures towards General Preparedness.

CHAPTER – 1 – ORGANISATIONAL SETUP

EXECUTIVE SET UP:

1. **CITY LEVEL**

2. **ZONAL OFFICER:**

The Officer in the Cadre of ZC/SE should be nominated as the Zonal Officer for Emergency operations during floods who is responsible for clearing inundations, tree falls, water stagnations, rescue and relief operations at Zonal Level. He should be the Coordinating officer between GHMC and other line departments and armed forces.

3. CIRCLE OFFICER:

The Officer in the Cadre of DC/EE should be nominated as the Circle Officer for Emergency operations during floods. He should coordinate the ward level officers and Monsoon teams in clearing inundations, tree falls, water stagnations, rescue and relief operations. Their responsibility is to arrange necessary equipments to attend emergencies and essential commodities are always available in stock. They should coordinate with zonal officers and ward officers to make any alternative arrangements if necessary.

4. WARD OFFICER:

The Officer in Cadre of Dy.EE may be nominated as Ward officer for Emergency operations during floods. He should work under the supervision and guidance of Circle officer. For rescue and relief measures during floods the ward level team should be formed including all the department officers responsible and all the officers should work under the leadership of Ward officer. Ward officer should ensure effective coordination between all the departments.

CHAPTER – 2 – WARNING AND COMMUNICATION SYSTEM

WARNING SYSTEM:

Heavy rainfall forecast and the flood levels (rainfall received recorded by Automatic weather stations) are being monitored by Disaster Management Cell, GHMC on hourly basis with the help of IMD Doppler weather radar. Further the forecast and flood levels will be communicated to all the HOD's in GHMC limits, Zonal Level, Circle Level control

rooms, through Whatsapp groups, Wireless sets, Police wireless sets, print and video media.

The Executive Engineer, DMC will flash the warnings to the specific circles based on the present flood level and further forecast for next 24-48 hours.

However, The Commissioner / The Director, DM, GHMC is authorized to issue warning to all the circles and ensure that information is conveyed to all the flood prone areas without any delay.

ALARM MECHANISM:

1) Uniform three stage alarm code is developed to indicate the level of emergency.
2) The warning will be issued to all the Additional commissioners and Zonal commissioners by the officer's in charge of EOC.
3) On receipt of warning all the officers' in charge shall take all the required measures for handling emergency operations as per the DMP.

- (**ONE**) – Alarm one will be triggered when forecast for spells of rain OR Wind speed of up to 20kms per hour.
    a) Receipt of weather forecast and dissemination by EOC,
    b) All Officers shall be Vigilant and ready for emergencies.
    c) All control rooms shall be in emergency mode.
- (**TWO**) – Alarm two will be triggered when forecast is for moderate rain (up to 2.0cms) OR wind speeds up to 40kms per hour.
    a) All Officers in charge for emergency operations start mobilizing the required men and materials.

- (**THREE**) – Alarm three will be triggered, when forecast is for moderate to heavy rainfall (more than 2.0cms) OR wind speeds more than 40km per hour.

    a) All Sectional heads i.e. Additional Commissioners, Chief Engineer and Superintending Engineers shall be stationed at EOC for effective co-ordinate.

    b) All Officers in charge for emergency operations shall be available in the field for effective co-ordination/field operations.

All the above 3 warnings will be communicated to the following by means of Whats app groups, Bulk SMS, wireless sets, all depts wireless sets should use one common frequency to communicate the information.

1) All the HOD's
2) All the Zonal level, City level officers
3) Zonal and Circle level control rooms
4) All Departments control rooms

The broadcast of weather bulletins from IMD, Hyderabad and the flood situation from GHMC Main control room should be suitably coordinated so that the same warning bulletin is available to the listeners.

COMMUNICATION MECHANISM:

1) **GHMC Wireless sets:** Should be available at all the Zonal, Circle level control rooms and Zonal, Circle in charge officers.
2) **Police Wireless sets:** One Constable who is full acquainted with the police dept procedures should be available at all the Zonal, Circle level control rooms for effective coordination.

3) One Common frequency wireless communication sets should be available at all the departments Control Rooms to reduce the delay in reaching the information.

4) Whatsapp groups

5) GHMC Mobile APP

6) Bulk SMS

7) FM Radio

8) Social media

9) Print and digital media

10) Satellite phones

Each department or division will ensure the ability to communicate between the EOC and their department, zonal/ward operations center, or with their operational units.

Disaster Management activities will be given priority use of all city's communication systems and resources.

Communication/Execution Structure

CHAPTER 3 - CONTROL ROOMS

1) Main Control room (@ GHMC Head office)

2) Zonal Control room (@ 5 Zonal offices)

3) Circle Control room (@ 30 Circle offices)

As soon as the Monsoon season arrives the Main control room will be established at the GHMC head office with the following staff:

1) Director, DM (In charge officer for the Main control room)
2) Executive Engineer, DMC, GHMC
3) Director, UBD
4) Dy. Executive Engineer, DMC, GHMC
5) Representatives from all the Line departments in GHMC limits
6) IT, GHMC
7) CMOH/AMOH
8) Sanitation Control room staff

Immediately after flashing Alarm 1, the Zonal and Circle level control rooms will be established at Zonal and Circle offices with the following officers

1) DMC or AMC or Superindent
2) Dy.EE
3) AMOH
4) Manager, horticulture
5) Representatives from all the Line departments in GHMC limits

All these control rooms will function round the clock and the officer in charge will prepare a duty chart keeping 2 persons at a time per duty for every 8 hours. During the menace, every duty officer/ staff member should be authorised to handle the flood messages over Police wireless/ GHMC wireless, telephone, in person according to necessity.

FUNCTIONS OF THE EMERGENCY OPERATIONS CENTRE/CONTROL ROOM:

1) Receive, monitor, and assess disaster information

2) Monitor, assess, and track response units and resource requests

3) Develop and disseminate public information warnings and instructions

4) The In charge officer should ensure that Control room have all the contact numbers. of GHMC Staff, Drivers and also have the contact numbers of Traffic Police, Fire Safety, Identified Hospitals, Ambulance, EMRI Services, HMWS&SB, APTRANSCO, Crane Operators, JCB Operators CISF and Civil Aviation, etc.

5) The In charge officer should ensure that control room has wireless sets with sufficient spare batteries.

6) The In charge officer should ensure that the sufficient staff is available in each shift.

7) At Main control room Weather forecast reports are monitored from IMD website, the same will be communicated to the zonal, circle control rooms and HOD's of all departments.

8) Based on the forecast, Alerts shall be triggered.

9) Grievances received through various sources like MY GHMC app, 2111111, ghmc online grievances, sanitation control room, dial 100, social media should be communicated to the concerned field officers of various departments by the representatives from the respective departments.

10) Zonal and Circle Control rooms should consolidate the status of grievances received in their jurisdiction for every two hours and communicate the same to the Main control room

11) Main control room should consolidate the reports received every two hours and submit the same to the Officer In charge for control room.

12) Zonal and Circle control rooms should communicate the activities and movements of the flood duty staff and the flood situations in that area after compiling to the Main control room.

13) Main control should be in regular contact with I&CAD officials and collect the water levels in all the tanks and communicate the same to the field officers for necessary action.

Finally, the information collected from all the zonal, circle level control rooms should be compiled at Main control room and a consolidated report should be submitted the Commissioner, GHMC every two hours.

The Zonal Officers should be aware of water levels in the tanks in their jurisdiction and receive the forecast of next 24 hours from DMC, GHMC so as to alert the low-lying areas that would be inundated and evacuate these people to safer places/ clear the flood water with the help of monsoon emergency teams.

CHAPTER4 – PRE MONSOON PREPARATORY STAGE

CAPACITY BUILDING/TRAININGS

The Commissioner, GHMC / Director,Disaster Management should call for a meeting with all HOD's of Line departments, AC's , Zonal officers, circle officers during the first week of May and every fortnight during Monsoon season.. They should detail them regarding their work profile during monsoon emergencies. The Zonal officers shall in turn convene a meeting a zonal level with circle officers, ward officers. They must give training

to them regarding their activities during flood situation. During training classes people who are having experience of handling floods shall be called to share their experiences. Health officers also should be called during training classes to give training in first aid operations and emergency medical care.

STAFF AVAILABILITY

Instructions should be issued to all the staff being drafted for Flood Duty for not leaving the headquarters without prior information to the Circle/Zonal officer. The Circle/Zonal officer may be made responsible either to call back the personnel or appoint a substitute in such places. The Commissioner, GHMC should issue instructions to all the staff personnel drafted for duty in Main control room, zonal, circle control rooms for not leaving the head quarters without prior permission of the divisional heads.

REQUISITION OF VEHICLES

The Executive Engineer (EE) Transport, GHMC should ensure that sufficient number of vehicles for emergency operations are available and kept roadworthy at Zonal and Circle levels. The EE, Transport, GHMC should identify and share contacts of private vendors dealing with equipments which are necessary for emergency operations like earth movers, pumps, cutters, etc to all the zonal and circle level officers so the same may be useful at the time of emergency.

REQUISITION OF FLOOD FIGHTING EQUIPMENT

All the Ward, Circle, Zonal level officers shall submit the estimation of required flood fighting equipments, labour required, etc.

Some of the preparedness measures include

1) Roads patch works
2) Desilting of nalas

3) Identifying and restoration of water logging points

4) Deployment of monsoon emergency teams

5) Identification of low lying areas and near by rehabilitation centres

6) Identification of dilapidated buildings and issue notices to dismantle

7) Communication plan should be established

CHAPTER 5 – SIMULATION EXERCISES

In view of Pre monsoon sudden rain/thunderstorms with heavy winds a meeting of the Commissioner, GHMC with all the HOD's of Line departments, Zonal, Circle level officers should be convened. In turn all the HOD's, Zonal, Circle level officers should convene meeting with their circle, ward level and monsoon teams.

As soon as the information regarding heavy rainfall forecast in received, the Zonal officer should get in touch with the Commissioner, GHMC and follow the instructions scrupulously from time to time. He must make all the arrangements to alert all the low-lying area people well in advance to facilitate timely evacuation.

A checklist of items to be monitored and enquired for proper flood preparedness is appended herewith. The Zonal officer shall attend and verify all items as per checklist. Any discrepancy noticed should immediately be brought to the notice of Commissioner, GHMC for indenting from respective departments.

Check list should contain the following items:

1) The earmarked buffer stock of all essential commodities made available at the respective DR depots, FP shops, etc.
2) Sufficient quantities of fuel should be stored for use by vehicles and for running generators, pumps, etc as per necessity.
3) Boats/Launches should be made available.

4) Sufficient stocks of Medicines by both Medical & Health and Animal Husbandry department are kept ready to prevent any out break.
5) Large cooking vessels for use in relief camps
6) All the emergency vehicles should be kept roadworthy
7) Availability of the equipment for emergency operations
8) All the personnel drafted for flood duty at City, Zonal, Circle level and Monsoon emergency teams are present
9) They must check all the communication systems established are in proper working condition or not.

Check List:

1) Availability of Staff
2) Availability and Condition of Flood fighting machinery
3) Availability of Communication systems
4) Mobile Infrastructure(vehicles, boats/launches, etc)
5) Medicine
6) Animal Husbandry
7) Essential Commodities
8) Inspection of areas
9) General

The Zonal Officer have to visit the places in his zone and furnish the information to the Chief of Operations (Director, DM) to plan for further action, if any necessary as per checklist.

CHAPTER 6 – DISASTER MANAGEMENT

FIRST WARNING----ALARM 1----PRECAUTIONARY STAGE

1) Alarm 1 will be triggered when there is a forecast for spells of Rain or Wind speed of up to 20kms per hour. Immediately the Executive Engineer, DMC will flash Alarm1 and communicate the same to the Commissioner, GHMC, HODs of line depts., ZCs, circle officers, zonal and circle level control rooms. In turn

Circle level officers will communicate the same to the ward level and monsoon teams.

2) On receipt of Alarm1, all the zonal, circle control rooms will start functioning round the clock.

3) The Superintending Engineer, I&CAD shall ensure that the gauge reading(water levels) of all the tanks in the GHMC limits and communicate the same to the Main control room @GHMC head office, which in turn will be communicated to the all zonal, circle control rooms.

4) All control rooms should record water levels in tanks till the flood recedes completely. The officer in charge of the control room is wholly responsible for recording every event of operation in the Logbook maintained.

5) The IMD, Hyderabad will give forecast for next 24-48 hours .The Forecast collected by DMC should be immediately passed on to all the Zonal & Circle control rooms, zonal, circle officers for alerting ward level, monsoon teams.

6) Chief Public Relations Officer, GHMC shall ensure that flood warning reaches to the people of all vulnerable localities by quickest means possible.

7) All the officers drafted for flood duty should report to their respective Headquarters to indicate the fact they are available at their places of duty.

8) Monsoon teams should report to their ward level officers and ensure that all the equipment for emergency operations is kept ready and stationed at most vulnerable localities in their jurisdiction.

9) The DE/ADE SPDCL should be informed to take steps for disconnecting power supply to tackle the issues like tree fall, building/wall collapse in the affected areas, if it is necessary.

10) As soon as alarm1 triggers, all the zonal & circle officers have to ensure that the vehicles equipped with all the flood fighting equipment required for emergency

operations like Quick Response Team Vehicles, Disaster Response Team vehicles, jcb,hitachi,etc are road worthy and the sufficient buffer stocks of fuel is available.

11) The Zonal and Circle officer shall verify the availability of all items as per checklist.

12) All the Line departments City level, Zonal level and Circle level Nodal officers shall report to the concerned Zonal and Circle officer and confirm their department's availability and readiness.

Secondary Stage----Alarm 2--------Action Stage:

1) Alarm 2 will be triggered when forecast is for moderate rain (up to 2.0cms) or wind speeds up to 40kms per hour. Once the Alarm2 is triggered, All Officers in charge for emergency operations should start mobilizing the required men and materials.

2) All the circle and ward level teams should swing into action by moving in their jurisdiction with Emergency vehicles equipped with pumps, tree cutters, generator, etc to tackle the Water stagnations, tree falls, Inundations, wall/building collapse, etc., stocks of essential commodities and medical supplies and should concentrate on most vulnerable locations.

3) Circle level officer should ensure that sufficient stocks of fuel are made available for all emergency vehicles.

4) Basing on the further forecast of rise beyond alarm2 and keeping in view gravity of distress, a press note may be given inviting all the service oriented NGOs to share the relief in cash or kind.

Third Stage------Alarm 3---------Evacuation Stage:

1) Alarm 3 will be triggered, when forecast is for moderate to heavy rainfall (more than 2.0cms) OR wind speeds more than 40km per hour. As soon as the Alarm

3 triggered all HOD's of Line departments and Sectional Heads in GHMC i.e. Additional Commissioners, Chief Engineer and Superintending Engineers shall be stationed at EOC for effective co-ordination. All Officers in charge for emergency operations shall be available in the field for effective co-ordination/field operations.

2) The EE, Transport(Head office), GHMC should request the MD, RTC for availability of sufficient buses/vehicles along with GHMC Transport vehicles for safe evacuation of people from inundated areas.

Air Dropping:

1) At third warning level, some of the areas get marooned. Despite timely efforts, relief teams may not be able to reach these flood affected areas in time and hence there exist necessary to drop food packets by helicopters.

2) The Commissioner, GHMC shall basing on further forecast of heavy rainfall, requisition for Helicopters.

3) Additional Commissioner, H&S should arrange cooking, packing of food, water, etc and lodging into helicopters. They should keep sufficient cooks for preparation of foods in nearby hostels/hotels. The areas for dropping of packets should be identified. It is essential that persons who are fully acquainted about these areas should be taken into helicopter for easy identification of dropping locations. They should report to Additional Commissioner, H&S when the alarm 3 triggered. The Zonal officer should get a list of significantly identifiable landmarks in food dropping locations and kept ready. Ward level/Monsoon teams should be instructed to hoist a white flag conspicuously to facilitate easy identification and dropping of food packets by Helicoptors.

Boats:

1) Similarly, basing on the flood level and further forecast boats from the sports, tourism, police, NDRF departments may also be procured for rescue and relief operations in vulnerable areas.

2) Once the evacuation is complete, it is the responsibility of the Circle level team to run the relief camp for the affected area people by drawing provisions at a time for 10 days from the nearest point and provide as per the relief scale and not exceeding that he may organize cooking of food and supply the same to the evacuated people. The Circle officer has to open a register of entrants and record supplies made from time to time.

3) In all the stages of warning, The Zonal officer being over all incharge of the zone should monitor and supervise the job of circle and ward teams and appraise the situation in relevant proforma to the Main control room and the Commissioner, GHMC.

CHAPTER 8 -- DUTIES OF VARIOUS OFFICIALS DRAFTED FOR FLOOD DUTY

1. PREPARATORY STAGE

CITY LEVEL:

1) To set up an Emergency Operations Centre (EOC) to with all the possible modes of Communication like Wireless base sets, Mobile phones, etc with sufficient batteries for back up.

2) Staffing the EOC to work on 24X7 basis.

ZONAL OFFICERS:

1) Attend meeting of Commissioner, GHMC in the 1st week of May and 1st week of August every year

2) Visit their respective zones, convene a meeting with Circle, ward level teams and organize training to circle, ward teams on activities during flood situation and accounting procedure to be adopted in distribution of essential commodities by the GOVT and for items with NGOs assistance serperately.

3) Inspect all the Rehabilitation centres/ Relief centres proposed for shelter and flood victims.

4) Ensure sufficient stocks of essential commodities, flood fighting machinery like boats, vehicles, medicines(in UHCs). Availability of large cooking vessel for use in relief camps.

5) Ensure that Rescue vehicles in their zone are roadworthy.

6) Issue instructions to all the zonal level staff drafted for flood duty to be present and not to leave without prior permission.

7) A report covering action taken on points 3-6 may be submitted to the Chief of Operations (Director, DM).

CIRCLE OFFICERS:

1) Attend the Zonal level meeting and coordinate with the ward level and Monsoon emergency teams by visiting the area under their jurisidiciton.

2) Conditional Maintenance/Repairs of Disaster Response Teams machinery has to done if needed, before on set of monsoon.

3) Consider the procurement of additional machinery, skilled/unskilled labour based on past experience.

4) Consider and make a decision on the request put up ward officers and submit the proposal to the Chief of Operations through Zonal officer. .

WARD OFFICERS:

1) Attend Circle level meeting convened by Circle officer and coordinate with Monsoon emergency teams.

2) Ensure that the flood fighting equipment available with Quick Response Teams are in working condition and vehicles are roadworthy.

3) Conditional Maintenance/ Repairs of machinery has to done if needed, before on set of monsoon.

4) Put up a request for procuring of additional/replacement of machinery if required.

2. ALARM1 (PREPARATORY STAGE):

ZONAL OFFICER:

1) He should report at Zonal headquarters

2) Open control room at Zonal office and ensure that all the communication equipment are installed and made operational.

3) Check once again all the stocks are stored.

4) Check availability of the staff drafted for flood duties.

5) Supervise operations of circle, ward teams in alerting vulnerable localities and providing necessary relief.

6) Ensure DRT vehicles are roadworthy and machinery are under working conditions

7) Check that sufficient of fuel is available for vehicles, generators ,etc.

8) Verify that all circle& ward level teams are having mobiles fully charged to communicate the forecast and necessary instructions

9) Collect data from ward & circle level and submit to the main control room.

CIRCLE TEAM:

1) To report in their respective circles

2) To coordinate between ward officers and zonal officer

3) Ensure QRT vehicles are roadworthy and machinery are under working conditions.

4) Check measure the buffer stocks of fuel.

WARD TEAM:

1) Keep checking their mobiles for weather forecast

2) Ensure that the QRT stationed at most vulnerable points

3) Coordinate with QRTs to clear water stagnations/inundations/tree falls etc

4) Communicate the status of the grievance attended and if any other requirement of men/machinery to the circle officer/control room.

QRT&DRT:

1) As soon as the Alarm1 triggered, QRT should be stationed at the most vulnerable points in their jurisdiction with all the necessary equipment and sufficient stocks of fuel to run the generator, pumps, etc.

2) They should swing into action to clear the water stagnations/inundations/tree falls etc.

3) Should inform ward officer timely the status of operations and if there is any additional requirement.

ALARM 2 (ACTION STAGE):

ZONAL OFFICER:

1) Should visit all the accessible locations by vehicles
2) Supervise the clearing of inundations/evacuation of people by circle, ward level teams.
3) Requisition for generators, jcbs, boats,etc as per the need.
4) He should coordinate with other line departments and armed forces if necessary.
5) Remain in touch with the I&CAD dept for immediate action on strengthening of weak bunds of tanks and ensure that patrolling is done near the weak points, and arrange opening surplus courses etc, to draw excess water.
6) Keep in constant touch with main control room and circle teams
7) Ensure that the Rehabilitation centres are in working condition and made operational
8) Ensure that all the inundations are cleared and affected people are safely evacuated if any.

CIRCLE OFFICER:

1) He should visit all the vulnerable locations in his circle
2) Supervise the clearing of water stagnations/inundations/tree falls etc by ward and monsoon level teams.
3) Keep in constant touch with main, zonal control rooms for forecast and instructions.
4) Ensure that the Rehabilitation centres are in working condition and made operational

5) Inform the action taken report on water stagnations/inundations/tree falls etc to the circle and Zonal control room.

WARD OFFICER:

1) Coordinate with monsoon teams in attending water stagnations/inundations/tree falls etc.

2) Inform the action taken report on water stagnations/inundations/tree falls etc to the circle control room.

3) Keep checking mobiles for further weather forecast.

4) Alert vulnerable locality people for evacuation basing on further forecast.

QRT&DRT:

1) As soon as the Alarm2 triggered, DRT should be stationed at the most vulnerable points as informed by the QRTs and ward/circle officers.

2) They should swing into action and assist QRT's to clear the water stagnations/inundations/tree falls etc.

3) Should inform ward officer timely, the status of operations and if there is any additional requirement.

ALARM 3 (THIRD WARNING –EVACUATION STAGE):

ZONAL OFFICERS:

1) Supervision and monitoring of Evacuation , rescue and relief operations of circle, ward, QRT, DRT teams.

2) Based on the information received from cirle, ward teams, QRT and DRT teams, the main control room and Chief of Operations may be informed about

deputation of additional DRT/DRF's(Disaster Rescue Forces)/armed forces/NDRF for rescue and relief operations and air dropping of food packets.

3) To coordinate between circle officers and deployed armed forces for rescue and relief operations.

4) Ensure that the Rehabilitation centres are made operational and the basic amenities are arranged at relief centres for evacuated population.

CIRCLE OFFICER:

1) To coordinate between ward officers and deployed armed forces for rescue and relief operations.

2) Evacuate people to rehabilitations identified and provide necessary relief.

3) Open register of entrants and record supply from time to time.

4) Provide commodities required, if any from the buffer stocks available.

5) Draw provisions at a time for 10 days and provide cooked food.

6) Furnish any other requirement as deemed fit.

WARD OFFICER:

1) Clearing inundations and evacuation of people to safer places.

2) Coordinate between circle officer and DRFs/NDRF/Armed forces.

3) Inform QRT and DRT regarding air dropping required if any and hoist white flags for easy identification of locations by helicopters.

DRT/DRF/

1) Visit all the flood affected places, ensure people are evacuated to safer places/relief centres.

2) Identify place where air dropping food packets are required and communicate immediately directly to the main control room and Chief of Operations through Zonal officer.

CHAPTER 8 – JOB CHART OF ALLIED DEPARTMENTS

CHIEF OF OPERATIONS (DIRECTOR, DM):

The Chief of Operations is responsible for the functioning of Hyderabad city disaster management organization. The position provides leadership, coordination, and management of all emergency operations being implemented by the City, in both the field and in the City's control room.

The position also serves as the City's authorized policy maker and official spokesperson regarding the disaster situation and the City's disaster management actions.

This position is also responsible for ensuring coordination of all City emergency operations with those of line departments in city, District Collectorate, adjacent jurisdictions and higher levels of government.

The Chief of Operations provides direct oversight and coordination of all City operations conducted at the City Control Rooms, including final approval of each DAP and instructing the City's Disaster Management Organization on the DAP implementation.

The position would also be responsible for allocating the contingency fund for emergency operations based on the contingency plan of the GHMC. Fund requirement can also be decided based on the magnitude of the disaster.

DISASTER MANAGEMENT, GHMC

Before:

1) To set up an Emergency Operations Center.
2) Conduct coordination meetings with representatives of all line departments/NGO's.
3) Maintain and update the contact & inventories list of all line departments and host in GHMC website.
4) Establish and maintain communication facilities like HAM radio, mobiles, VHF, landline etc. on priority wherever required.
5) Allocate funds for communication services.
6) Develop and maintain the communication facilities that can be transported to incident sites for effective communication.
7) Establish and maintain a special frequency operating wireless communication with all departments control rooms.
8) Identify and rectify damaged communication facilities.
9) Coordinate with Telecommunication providers to establish bulk SMS and email communication with citizens to issue warnings.
10) Establish fully equipped Rescue teams with unskilled and skilled/trained officers.
11) Establish Quick Response Teams and Disaster Response Teams.

12) Establish Hyderabad Disaster Rescue Force(HDRF) to attend search and rescue operations.
13) To conduct Training programmes and mock drills/exercises to all QRT, DRT, HDRF teams, skilled and unskilled labour, officers who are assigned to deal with any kind of disasters.
14) Procurement of Men, Machinery, vehicles , etc., required for QRT and DRT.
15) Nomination of Nodal officer at ward, Circle and Zonal level to command and control the operations of QRT and DRT.
16) Locate, procure, and issue resources to other support agencies for use in emergency operations necessary to support the emergency response or to promote public safety.
17) Coordinate the procurement of various equipment in coordination with respective departments.
18) Identify resources that are not available locally and find their nearest location.
19) Coordinate activities with other response agencies to ensure a coordinated and efficient allocation of resources.
20) To provide resource management support.
21) To develop and update resource inventory.
22) To keep a stock of material and equipment.
23) Implement financial management, procurement and tracking system.
24) Identify actual and planned action of private communication operators towards operationalizing their own facilities in affected areas.

During

1) To establish operations at Emergency Operations Center.
2) Deploy representatives (who are well acquainted with departmental procedures) of all line departments in the EOC.
3) Check the working condition of all the communication mechanisms through test calls.
4) Dissemination of IMD forecasts to all the control rooms and HODs.
5) Provide regular updates and coordinate with field level staff and higher authorities.

6) Identifying the feasible and effective locations for stationing the QRTs,DRTs and HDRFs.
7) On receipt of emergency call, operationalize level of activation based on nature & severity of incident.
8) Maintain a log of actions taken,communication resource needs and capabilities.
9) Analyze the potential of the emergency to know what types of resources would be needed.
10) To organize receiving of relief materials.
11) To send reinforcements at the incident site if required.
12) Assess the impact of the disaster on the community.
13) Determine needs and available resources.
14) Report on status and actions taken, to the EOC staff.
15) Protect resources from possible damage resulting from the disaster.
16) Secure a workable location for the storage and distribution of goods and services required during the disaster.
17) Coordinate resource requirements and requests of other line departments.
18) Work closely with other departmetns to minimize duplication of efforts.
19) Commit all local resources assistance requesting from neighboring jurisdictions or upper levels of government like SDRF, NDRF, Armed forces, etc.
20) Maintain complete log of actions taken and report on needed resources along with their capacities and capabilities.

After

1) Conduct review meeting with HOD's of GHMC, HODs of all line departments/organisations, NGOs, etc.
2) To start rehabilitation.
3) To dismantle relief camp and support service in a phased manner.
4) Review damage assessment and make an estimate of resources needed for recovery.
5) Evaluation and improvements to the existing action plan from the lessons learnt.

Public Information Officer (CPRO, GHMC):

This position supports the Chief of Operations through management and coordination of all City activities related to public information, emergency instruction and media management.

The position will be activated by the Chief of Operations when warranted by the need for emergency instruction and public information within the City. All public information and media management activities by the City will be managed and coordinated by the position. Other components of the City's Disaster Management Organization will conduct any public information activities through this position.

Before

1) Update list of public information media (print, radio and TV, etc).
2) Participate in Mock Drills, Table Top exercises.
3) Maintain list of radio frequencies.
4) Develop frequency use procedures and protocols. Schedule tests, exercises
5) Establish the communication mechanism to issue warnings to the public through all possible media.
6) Disseminate information to the citizens about action taken for monsoon preparedness by GHMC through print and electronic media.

During

1) When alarm triggered, report to the EOC.
2) Ensure that the emergency communications section in the control room is equipped with the appropriate communication gear.
3) Manage the emergency communications section in the EOC to include radio,fm, telephone, mobile phones, repair crews, amateur radio, backup resources etc.

4) Coordinate with Print and Digital media in communicating the warnings and notices to the public.

5) Disseminate information about flood affected areas and actions taken by government through media.

6) Disseminate evacuation information to the affected people through media.

7) Provide mass notifications to the populace and provide periodic media updates.

8) Issue messages for public safety and mutual cooperation.

9) Organize a press briefing in EOC as appropriate.

10) Maintain a log of actions taken, reports of resources needs and capabilities.

After

Continue public information activities and update citizen on recovery efforts.

Prepare an After-Action Report to identify lessons learnt and improvements needed.

CHIEF MEDICAL OFFICER (CMOH):

This position supports the Chief of Operations by monitoring response operations, and all other available information to ensure protection of the health and safety of the City's emergency personnel, City residents, and other individuals with emergency functions within the City. The position will be staffed by the City's Medical Wing or designee.

The position will gather information from field operations by the City, from the Chief of Operations, or any other available source regarding known or potential health and safety threats, and will advise the Chief of Operations on the appropriate actions by the City.

The position will also monitor implementation of the emergency plans of the residential health care facilities located within the City and ensure their timely and effective implementation.

Before

Initiate Information, Education and Communication activities to create awareness on water born diseases, epidemics. etc and preventive sanitation measures to safe guard among the vulnerable and low lying area population.

Conduct coordination meetings with private & public sector hospitals, dispensaries, medical institutions, blood banks, ambulance services etc.

Undertake vaccination and disinfection programmes.

Assess and provide technical assistance on potable water, wastewater, solid waste disposal etc.

Enter into a contract with the Civil Suppliers for immediate arrangement of food and relief materials during a crisis.

Ensure coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.

During

1) Provide technical assistance to the EOC and validate requests for medical services.
2) Validate requests from affected areas for public health and sanitation resources.
3) Provide reports to the EOC & anticipate future public health & sanitation requirements.
4) Liaise with secondary & tertiary medical institutions for care of critically wounded.
5) Assist in relief supplies for mass care and medical facilities.
6) Deploy of personnel and resources within the framework of EOC direction and decision making process.
7) Oversee distribution of relief supply of food and other essential supplies.
8) Assist in proper distribution of relief to all, ladies like family heads, widows, old and disable persons should be given priority.

After

1) Compile information about injured & deaths and report the same Chief of Operations through EOC.
2) Assessing the threat of vector-borne diseases.
3) Providing technical assistance and consultation on protective actions regarding vector
4) borne diseases.
5) Prepare an After- Action Report to identify lessons learnt and improvements needed.

LIAISON OFFICER (DEPUTY COMMISSIONER):

This position supports the Chief of Operations by ensuring effective communication and information exchange with facilities, organizations, and key individuals outside of the City's Disaster Management.

To Liaison with all line departments, viz. Revenue department, Fire, Police, Irrigation, a Special officer can also be appointed either from Engineering Department or Public Works Department, as these departments along with Health and Urban community department (Community Development Societies), are mainly deal with emergency field operations.

Maintain liaison with all line departments and provide 24- hour emergency contact information including critical personnel, emergency chain of command, and notification procedures.

CHIEF TRANSPORT OFFICER, GHMC & TSRTC:

Before:

1) Transportation policy should reflect that all Hyderabad city's transportation resources will be utilized on a priority basis to save lives and property.

2) Maintain an updated comprehensive inventory of transportation resources available within GHMC and other line departments.

3) Determine present and future need for transportation resources.

4) Create a pool of private vendors to supply vehicles, machinery at the time of emergency.

5) Undertake Conditional maintenance of vehicles on priority basis.

6) Creating safety buffer stocks of fuel.

7) Operate fleet repair facility.

8) Develop emergency action checklists which includes status of transportation resources, fuel stocks, availability of staff (vehicle drivers).

9) All the vehicles deployed and kept ready for disaster management shall be checked and started for a while periodically. Fuel should be top up daily

10) Shall keep small earth moving equipments in road worthy condition.

11) Keep matching no. of drivers in spare round the clock.

12) Map the city and identify the location of nearest yard for any location in the city through CCP.

During

1) When notified of a disaster incidence, report to the Chief of Operations.
2) Coordinate transportation activities with the appropriate tasked organizations.
3) Coordinate and supply transportation resources as requested by field staff.
4) Ensure transportation facilities for search and rescue teams, medical teams, supply of rescue equipment and water, food and accommodation materials to affected areas.
5) Coordinate with EOC and Monitor the incident location situation.

ENGINEERING DEPARTMENT, GHMC:

Before:

1) Assist in Developing alternate arrangements of shelter for population living in structures that might be affected after the disaster.
2) Appoint additional contractual labour as per requirement.
3) Install de-watering pumps at critical flood-prone location.
4) Widen, deepen and remove silt from storm water drains, outfalls, rivers etc.
5) Assess gaps in equipment support before any disaster.
6) Develop and Maintain the inventories of resources and equipment.
7) Coordinate training of engineers on damage assessment and restoration.
8) Maintain pre-disaster maps, photos, videos, and other documents.
9) Suspend major infrastructure work by 31st May.
10) Desilt culverts and drains wherever required.
11) Provide names & contact numbers of officers to EOC who deployed on emergency vehicles.
12) Keep machine tools in working condition.

During

1) Nominate senior officer to the Control Room when the control room has been activated for emergency management.
2) Coordinate with QRT & DRT at flooding spots
3) Open sewer manholes to drain storm water and barricade them.
4) Provide for emergency clearance of debris to enable reconnaissance.
5) Appoint additional contractual labour as per requirement.
6) Install de-watering pumps at critical flood-prone location
7) Prioritize equipment to be used during disasters.
8) When notified of an emergency situation, send response teams/personnel, equipment, and vehicles to the emergency scene, staging area, or other location, as appropriate.
9) Assisting in search and rescue efforts.

Conducting damage assessment activities (through the use of vehicles, remote video equipment, etc., as appropriate).

Providing emergency generators, fuel, and lighting, sanitation to support emergency responders at the emergency scene and at the control room.

After

1) Follow the instructions of EOC and work closely with supporting agencies for temporary recovery of their services.
2) Assist in Developing alternate arrangements of shelter for population living in structures that might be affected after the disaster.
3) Restore infrastructure like health centers, schools, public/private buildings, roads, drainage network etc.
4) Restoration of roads and paver blocks.
5) Restore all damaged infrastructure.
6) Prepare an After- Action Report to identify lessons learnt and improvements needed.

URBAN COMMUNITY DEPARTMENT:

1) Coordinate with Rescue teams for evacuating vulnerable population from slum pockets
2) Coordinate with Self help groups, NGO's, etc in assisting the rescue operations
3) In Coordination with Revenue Department identify and operationalise the rehabilitation centers to provide shelter to the evacuated population.
4) Deploy personnel for damage assessment
5) Assist Revenue and CMOH in coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.

TOWN PLANNING DEPARTMENT:

Before

1) Identify clear open spaces close to traffic and transport links for organize / setting up relief camps.
2) Keep a log of safety of buildings and structures.
3) Tag buildings and structures based on damage and communicate information to EOC and supporting agencies to secure them.
4) Issue alert warning to residents of dilapidated buildings / landslide prone areas. Initiate process to demolish unsafe buildings.
5) Issue notices to the population living in Nala enchroachments, with in FTL limits to vacate and move to safer places.
6) Identify and issue notices to the owners of dilapidated buildings which are prone to collapse.
7) Initiate process to demolish unsafe buildings.
8) Identified flood diversion areas: Flood waters are diverted to these unpopulated areas, so
9) that populated urban areas may be protected.
10) Identify and notify evacuation routes to engineering department.
11) Certification of Structure stability/livability conditions post flooding.

R&B DEPARTMENT:

1) Ensure the city roads in good condition - patch works & pot hole repairs on the city roads.
2) Certify structural integrity of government buildings prior to any re-entry.
3) The list of roads which gets submerged at different levels and alternative routes. Immediately after receding of floods, the Engineers shall visit the entire area, estimate damages caused to roads, culverts and buildings, etc., besides removal of

fallen trees/tenements. Wherever necessary, repairs have to be taken up on war footing basis to restore vehicular traffic. Further, topo sheets have to be kept ready to coordinated with air dropping of food packets by the pilots. Department shall ensure that alternate roots are in roadworthy condition and if needed, to take up urgent repairs in advance. They have also to ensure that in the areas inundated with flood water the buildings are still livable and certify the same before the evacuated people return back to these areas. The people shall be allowed to go back to their houses only after certification about the livability of the house by the R&B Dept. The Dept shall particularly maintain Govt building such that none of the buildings shall be damaged beyond a point for all these buildings would be inhabitated by lot Govt officials who will be monitoring the floods.

TS TOURISM/ TSSPORTS AUTHORITY

1) Identify and make an area wise list including contact numbers of professional swimmers to save lives of people during floods.
2) Kept ready with sufficient number of flood fighting equipment like boats, ropes, skilled workers, etc.
3) Ensure the staff availability.
4) Conditional maintenance of flood fighting equipment.

HMWS & SB:

During

1) Open sewer manholes to drain storm water and barricade them.
2) Conduct field investigations, including collection and laboratory analysis of water samples.

Before

Create awareness through IEC activities among the communities on water born diseases.

1) Clear the sewer lines and arresting of leakages to avoid contaminations.
2) Replacement of damaged manhole covers on immediate basis.
3) Restoration of all road cuttings shall be completed by the end of June to avoid traffic problems during flow of water on roads.
4) Providing Drinking water supply to the relief camps.
5) In special conditions, provide water tankers with heavy duty pumps to clear inundations.
6) Coordinate relief supplies for mass care.

INDIAN METEOROLOGICAL DEPARTMENT, HYDERABAD (IMD):

IMD will play a vital role as every action of Disaster management is solely depends on its weather forecast. The IMD furnishes the weather forecast for next 24-48 hours to DMC, GHMC and also provide the Now cast for every three 3 hours which will be accurate as per the previous experiences. IMD, Hyderabad also equipped with the Doppler Weather Radar which gives accurate information about the present cloud situation with location, intensity and its movement direction. With the help of Radar images it is possible to alert specific area officers.

TSSPDCL/ TELECOMMUNICATION DEPARTMENT

Before

1) Monitor power resources likely to be damaged during a disaster and in need of repair work.
2) All the linemen/field staff shall use relevant safety gadgets while working on distribution network and also creating proper safety zone before starting repair/maintenance work.

3) On safety aspects, all the section officers will inspect the hazardous locations and same may be rectified before starting of monsoon especially distribution box/metering box/LT feeder pillar box where door is open, take action to close the door properly to avoid leakage of current during rain and blocking of water inside the equipment.
4) All the service station vehicles shall be well equipped with (additional 1 JE + 4 Linemen) manpower, materials and safety accessories rendering services on hired basis shall be equipped with Medical Kit for providing First Aid treatment for the fatalities and tool kit for attending vehicle minor breakdown.
5) Provide separate lines and separate sources of power for critical substations.
6) Collect, assess, and provide information on power supply and demand.
7) Identify resources needed to restore power systems.
8) Train staff to attend to emergencies.
9) Ensure sufficient stocks of essential spares such as cables, transformers, etc.
10) Raise level of transformers and substation equipment above flood level.
11) Conduct awareness programmes for consumers.
12) Ensure the broken and tend to break down electric polls removed and replaced
13) Identifying and Pruning of tree branches which are prone to fall on electric wires.

During

1) A senior official nominated as nodal officer shall report at EOC.
2) Nodal officer will receive and give briefings and updates to EOC staff.
3) Deploy emergency response teams as needed at affected area(s) to assist in response and restoration efforts.
4) Collect current information on damage and area affected.
5) Upon issue of flood alarm for a location, the concerned Electrical Engineer should take the steps for disconnection of power supply to the areas affected.
6) Prior information to consumers regarding power outages through all possible media.
7) Maintain a log of actions taken, reports of communication resource needs and capabilities

After

1) After receding of floods department should visit the affected areas, clear roads of electricity/telephone poles, inspect damages caused and restore the utilities as quickly as possible.

2) Check transmission and distribution lines and coordinate with line agencies to repair damaged power systems.

3) Assess the requirements of restoration.

4) Prepare an After Action Report to identify lessons learnt and improvements needed

POLICE DEPARTMENT

Before

1) Conduct a mock drill for the law & order situation during floods
2) Conduct Training programmes to police personnel for rescue Operations.

During

1) The police department shall kept on high alert from the time of issue of flood alarm.

2) Deploy senior officer at EOC.

3) The police must instill public confidence that their properties and belongings are properly guarded in the event of evacuation.

4) They should install communication devices like wireless sets, mobile phones, and satellite phones at earmarked places by deputing personnel for passing of messages.

5) Assist the rescue teams in evacuating the population, rescue and relief operations.

6) Issue alert warnings to vulnerable localities and low lying areas for likely evacuation.

7) Ensure law and order situation in affected area.

8) Protect life and property, and keep close watch on anti-social elements

After

1) Assist to evacuate stranded, trapped citizens into relief centers.
2) Maintain records containing all relevant information relating to action points and contact points.
3) Prepare an After ActionReport to identify lessons learnt and improvements needed.

TRAFFIC POLICE:

Before

1) Identify the alternate root's available for each road network to divert the traffic in case water stagnations/tree falls.

2) Should maintain the Contacts of all departments in GHMC

During:

1) Identify convenient parking lots and seek appropriate permission from the land owners.
2) Inform the location of water stagnation points /tree falls to the concerned officer
3) Provide extra police personnel at traffic diversions
4) Provide information about traffic flow to the public through media, public address system, sign boards and display boards
5) Ensure full support to GHMC in barricading the water stagnation/tree falls areas.
6) Erection of Caution boards to divert the traffic based on flood situation and further forecast.
7) Clearance of vehicles which struck on roads.

8) Provide a green channel/Traffic free channel for the Emergency team Vehicles to attend the emergencies at the earliest.
9) At the time of evacuation, identify the optimum ways to transport the population to relief centres.

MEDICAL & HEALTH DEPARTMENT

1) Mobile medical teams shall move by boats/launches, helicopters, rescue vehicles to render medical aid to the marooned locations.

2) Post flood relief measures includes survilliance of Gastro-enteritis, Diarrhea and dysenterary and spraying of disinfectants to prevent the epidemics.

3) Maintenance of public water supplies, erecting temporary lavoratories and urinals shall be organized at relief camps/rehabilitation centers to prevent epidemics. To prepare the checklist of medicines to be procured and stocked. Constitution of mobile medical teams.

4) Coordinate relief supplies for mass care and medical facilities.

5) Before

6) Initiate Information, Education and Communication activities to create awareness on water born diseases, epidemics. etc and preventive sanitation measures to safe guard among the vulnerable and low lying area population.

7) Conduct coordination meetings with private & public sector hospitals, dispensaries, medical institutions, blood banks, ambulance services etc.

8) Undertake vaccination and disinfection programmes.

9) Assess and provide technical assistance on potable water, wastewater, solid waste disposal etc.

10) Enter into a contract with the Civil Suppliers for immediate arrangement of food and relief materials during a crisis.

11) Ensure coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.

During

1) Provide technical assistance to the EOC and validate requests for medical services.
2) Deploy medical teams on site for emergency medical support.
3) Validate requests from affected areas for public health and sanitation resources.
4) Provide reports to the EOC & anticipate future public health & sanitation requirements.
5) Provide medicines, water and food in temporary shelters.
6) Liaise with secondary & tertiary medical institutions for care of critically wounded.
7) Liaise with secondary & tertiary medical institutions for care of critically wounded.
8) Arrange dead body disposal, victim identification, mass fatality management and decontaminating the remains.
9) Safety and security of medicines and medical devices.
10) Coordinate relief supplies for mass care and medical facilities.
11) Deploy of personnel and resources within the framework of EOC direction and decision making process.
12) Oversee distribution of relief supply of food and other essential supplies.
13) Ensure proper distribution of relief to all, ladies like family heads, widows, old and disable persons should be given priority.
14) Conduct field investigations, including collection and laboratory analysis of relevant
15) Samples

16) Provide technical assistance and consultation on potable water and waste-water/solid
17) waste disposal issues.

After

1) Compile information about injured & deaths and report the same Chief of Operations through EOC.
2) Assessing the threat of vector-borne diseases.
3) Providing technical assistance and consultation on protective actions regarding vector
4) borne diseases.
5) Prepare an After- Action Report to identify lessons learnt and improvements needed.

ANILMAL HUSBANDRY:

1) The AH department should stock the sufficient quantities of medicine and fodder in advance to swing into emergency during menace beside chalking out detailed programmes for precautionary measures by constituting the teams to prevent cattle diseases, epidemics and estimation of loss to the livestock's

2) The list of medicine and vaccines that are required to be stocked during the flood season should be prepared and procured accordingly.

3) The AH departments shall ensure that all the Veternary Doctors are available at headquarters and also ensure that there is no spread of animal diseases and also ensure that precautionary vaccination shall be taken well in advance.

FIRE:

Before

1) Conduct Training and Refresher Courses for Flood Rescue Teams.
2) Repair and maintain rescue boats and other ancillary equipment.

3) Prepare plans for the utilization of resources, personnel, equipment and supplies in the most effective manner.
4) Keep fire stations and Regional Command Centers fully equipped with manpower and
5) machinery for rescue operations.
6) Keep their teams / staff ready with vehicles, dewatering pumps, ladders and ropes etc. for dewatering.
7) Conduct mock drills, awareness programs etc.

During

1) Assist GHMC Engineering department in clearing major water stagnations, inundations and tree fall complaints as equipped with heavy duty pumps and machinery.

2) Evacuation of people who are trapped in building top, on the trees and hillocks.

3) Dispense resources required based on need and augment men and machinery if necessary.

4) Direct operations from a safe distance and ensure ability to escape.

5) Assist in rescue, search and evacuation operations.

After

1) Prepare and submit the action taken reports to the EOC and Chief of Operations.
2) Review and improvise the existing action plan based on the lesson learnt during flood fighting activities.

REVENUE DEPARTMENT:

Before

1) Identify Low lying areas and vulnerable population
2) Identify adequate and appropriate relief/rehabilitation shelters in each ward.

3) Identify suppliers of relief materials.
4) Coordinate procurement and allocation of relief supply.
5) Ensure functionality & stability of shelters.
6) Enter into a contract with the Civil Suppliers for immediate arrangement of food and relief materials during a crisis.
7) Ensure coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.
8) Develope alternate arrangements of shelter for population living in structures that might be affected after the disaster.
9) The list of safety buffer stocks of essential commodities like Rice, granes, etc., should be prepared and procured accordingly to organise the relief camps/rehabilitation cetres.

During

1) Deploy a senior officer to the EOC.
2) Provide technical assistance to the EOC and validate requests for mass care resources.
3) Assess the disaster situation and determine mass care response needs.
4) Coordinate disaster response operations through identified nodal officer in respective wards.
5) Locate adequate relief camps based on damage assessment.
6) Coordinate shifting of population from affected sites to relief centers/safe sites.
7) Provide adequate and appropriate shelter to the affected population.
8) Make emergency food supplies available to the affected population.
9) Coordinate relief supplies for mass care and medical facilities.

10) Assess the disaster situation and determine the adequacy of mass care response activities.

11) Provide reports to the EOC response structure and anticipate future mass care requirements.

12) Provide technical assistance to the other agencies like NGOs providing mass care.

13) Deploy of personnel and resources within the framework of EOC direction and decision making process.

14) Oversee distribution of relief supply of food and other essential supplies.

15) Ensure proper distribution of relief to all, ladies like family heads, widows, old and disable persons should be given priority.

1) Revenue Department should extend full cooperation in evacuation of public from submergence areas. They should coordinate with the concerned departments for relief measures during floods and at the time of wall or building collapse.

2) Post disaster Need/Impact/Damage assessment should be done.

3) In coordination with GHMC, extend financial support to organize the relief camps and to release exgracia to the damaged properties and population.

After

1) Set up community kitchens in temporary shelters and open spaces and ensure nutritious food for victims.
2) Provide separate toilets, baby foods, sanitary towels etc for women and children and take care of pregnant women, adult girls, babies, disabled and old person in the camp.
3) Prepare briefings on status of response operations.

4) Compile and maintain the information of relief supply and submit these to ESF Resource Management upon request.
5) In coordination with GHMC, extend financial support to organize the relief camps and to release exgracia to the damaged properties and population.
6) Prepare an After-Action Report to identify lessons learnt and improvements needed

I & CAD DEPARTMENT:

Before

1) Ascertain flood gates are in working condition, man with trained staff and provide tide table to them.
2) Widen, deepen and remove silt from lakes, ponds, rivers etc.

During

Monitor flood gates operation regularly.

1) Regular monitoring and hourly collecting the water levels of all the tanks in the city and accordingly alert their staff for attending to strengthening of weak bunds, opening surplus courses to drain off excess water.

2) Patroling has to be done near the weak points of water tanks/ponds/lakes to avert any breaches.

3) Wherever necessary, immediate repairs to the breaches need to be attended on priority basis.

4) Ensure that senior officers are strategically stationed to take up the remedial action as and when required.

5) Especially Hussain sagar lake during heavy rain fall and intimate the GHMC, Revenue, Police officials when water level reaches FTL for necessary action.

6) Obstruction on surplus weir for free flow of water

7) Weak bunds be strengthened and as a preventive measure to avoid breach.

8) Ensure stock of sand bags for temporary bunding, JCB, Cranes, Boats & personal likes divers.

HMR LIMITED:

1) Restoration of all road cuttings shall be completed by the end of June to avoid traffic problems during flow of water on roads.

2) Barricading the working area in case of excavated pits.

3) Request to depute men & machinery to attend to the contingency works.

4) Requested to ensure radium stickers and proper lighting is provided during nights so that working area is clearly visible to the traffic.

CANTONMENT BOARD:

1) Requested to form their contingency teams with men / equipment to meet any kind of emergency in cantonment areas.

SOUTH CENTRAL RAILWAY

1) Notify submergence of railway track - diversion, cancellation of rail transport.

TSRTC

1) Transportation policy should reflect that all Hyderabad city's transportation resources will be utilized on a priority basis to save lives and property.

2) Identify and Notify the diversion roots of Bus transportation in the event of disasters from a particular road.

3) Arrange the vehicles to evacuate the people to rehabilitation centers/safer places.

4) Create safety buffer stocks of fuel.

5) Develop emergency action checklists which include status of transportation resources, fuel stocks, availability of staff (vehicle drivers).

ROLES OF PRESS & MEDIA

1) The role of Press & Media is particularly important as it helps in allaying the fears of public. The Presss & Media should be in touch with the administration from the commencement of the season for flashing of news items in the daily news papers/TV about heavy rainfall forecast. This will help to educate the people about the possible hazards, steps to mitigate distress and role Government/NGOs are playing.

UBD

Before

1) Prune branches of unbalancedand newly planted trees.
2) Paint tree trunks to protect them form insects.
3) Keep a stock of saplings for planting during monsoon.

During

1) Cut fallen trees and transport to appropriate location.

After

2) Repair tree guards

RESCUE & FLOOD RELIEF EQUIPMENT

DIVING EQUIPMENT

3) Person
4) al diving kit (Diving suit Breathing apparatus weight belt gloves dive fins)

5) High pressure breathing air compressor
6) Under Water torch
7) Under water communication set
8) Under water Video Camera

PUMP

1) Floating pump

BOATS

2) Inflatable boat with OBM (FRP)
3) Rescue Boat
4) Inflatable motor rescue boats small (10 seated)
5) Life buoys
6) Inflatable motor rescue boats bigs (20seated) Boat Assault Universal Type with OBM 50 HP
7) Synthetic Life Jackets

CAUSES OF STRUCTURAL COLLAPSE

According to "Study of Recent Building Failures in the United States" report:

"The principal causes of building failures are categorized as deficiencies in design, detailing, construction, maintenance, use of materials, and inadequate consideration of external events. Deficiency in design constitutes errors, mistakes, oversight, omission, or conceptual flaw that could have taken place during the design process of the building. Detailing is a ''transition'' process between design and construction periods, in which the details of the structural design are prepared for their implementation through shop drawings. Detailing deficiency includes errors, mistakes, omissions, and discontinuity/loss of design concept. Construction deficiency occurs as problems with workmanship and deviation of results from the specifications."

The India Disaster Report 2013 points out the following causes of building collapse:

1) The structure is not strong enough to support the load and hence it fails when it reaches a critical stress level. The structure may be weak due to its shape, size, or choice of its material.

2) The instability due to geometry, design, or material choice, will cause the structure to fail from fatigue or corrosion.

3) Failure may also occur due to improper selection of materials, incorrect sizing, improper heat treating, or shoddy workmanship.

4) Failure may also occur from use of defective materials. The material may have been improperly manufactured, or may have been damaged from prior use.

5) Vandalism, sabotage, and natural disasters can overstress a structure to the point of failure. Improper training of those who use and maintain the construction can also overstress it, leading to potential failures.

REMEDIES/PREVENTION MEASURES

1) The structural designs prepared by the engineer appointed by a builder must be cross-checked by another structural engineer appointed by the municipal corporation. The municipal corporation may hire external structural consultants for the purpose. This will prevent faulty structural designs that may result in building failure.

2) The site execution of construction work, especially with respect to RCC work must be supervised by an external licensed supervising engineer appointed by Municipal Corporation.

3) Soil investigation report of the site must be made mandatory and must be conducted by a reputed institute or a laboratory. This will reduce the risk of building collapse by foundation failure.

4) The final copies of design and drawings must be given to the owners of the building for safe keeping which will become useful when any structural repairs are to be done in future.

5) Any structural repairs work or addition of new floors must be done only after consulting structural engineers.

6) For buildings which are old and which are showing signs of deterioration, immediate health check must be carried out and proper repairs must be implemented after consulting a structural engineer.

COLLAPSED STRUCTURES SEARCH AND RESCUE STANDARD OPERATING PROCEDURES

The following procedure establishes a standard structure and guideline for all Rescue Team personnel operating at incidents involving structural collapse rescue operations. The procedure outlines responsibilities for various officers/technicians to such incidents. As the structural collapse rescue operations present a significant danger to Rescue team personnel, the safe and effective management of these operations require special considerations. This procedure identifies some of the critical issues which must be included in managing these incidents.

A phased approach to structural collapse rescue operations which include; Arrival, Pre-rescue operations, Rescue operations, and Termination, can be utilized to safely and effectively mitigate these high-risk / low-frequency.

INCIDENT PRIORITIES

The following priorities will guide in decision making during the incident:

1) Life Safety

2) Incident Stabilization

3) Property Conservation

ASSESSMENT

The officer assigned to the operations section should determine the following:

1) Are the risks worth the rewards utilizing the Tactical Guidelines SOG Risk Assessment?

2) Is the Building:

   a) **UNFRAMED:** Structures in which the weight of the floor and roof are supported by bearing walls.

   b) **FRAMED:** Structures that are erected by constructing structural steel or reinforced concrete skeleton made of horizontal beams and vertical columns.

3) Is There a Potential for Secondary Collapse:

   a) **WALLS OUT OF PLUMB:** Walls that have large bows in the middle, are leaning or separated from the floor.

   b) **SMOKE OR WATER MOVEMENT THROUGH BRICKS:** At the scene of fire ground collapses.

   c) **BEAMS PULLING AWAY:** Be alert for the separation of support beams from the walls to which they are attached.

   d) **BUCKLED STEEL BEAMS:** After heavy fire loads, look for beams that sag or are distorted.

   e) **LARGE CRACKS, PLASTER FALLING:** Large cracks that appear in walls, roofs, floors or other structural components.

   f) **NO RUN OFF OR SOGGY FLOORS:** As a result of firefighting operations or as a result of weather.

   g) **OVERLOADING OR AGE:** Look for sagging roofs, floors, or spans that creep.

   h) **NOISE:** Listen for buildings that creak, moan, groan, snap, crackle or pop.

4) Control All Utilities Quickly

   a) Gas

   b) Water

   c) Electrical

   d) Sewer

VOID DETECTION

Voids may be formed for a variety of reasons and in a variety of forms. During the search phase, survivors are most likely going to be found inside of voids. These voids may be of different sizes and shapes and are affected by the nature in which the building collapses.

Be able to spot certain types of collapses and identify the following types of voids:

1) Lean-to-Floor Collapse: Occurs when one of the supporting walls fails or when floor joists break at one end. This type of collapse usually creates a large void.

2) Lean-to-Cantilever: This form occurs when one end of the floor or roof section is still attached to portions of the wall. The other end will hang unsupported. THIS TYPE OF COLLAPSE IS EXTREMELY DANGEROUS.

3) V-Shape Void: This occurs when heavy loads cause the floor to collapse at the center. OCCUPANTS ABOVE THE TRAPPED FLOOR WILL USUALLY BE FOUND IN THE BOTTOM END OF THE COLLAPSE. VICTIMS BELOW THE COLLAPSE FLOOR WILL BE FOUND IN VOIDS.

4) Pancake Collapse: Is the result of the total bearing wall or column failure of an upper floor causing the upper floors to pancake down on the floors below. Victims may be found between floors or in voids created by household or office furniture which supports the floors.

PHASE I ARRIVAL

During the Arrival phase of a structural collapse incident, Command must take strong control of the incident to prevent the situation from quickly deteriorating into a chaotic event. A structural collapse incident is likely to have unorganized, volunteer rescue efforts being conducted by civilian personnel which creates an unsafe situation for the volunteers as well as rescuers. Command must focus attention early on building a strong Command structure that will ensure the safety of rescue personnel and support this complex campaign operation.

1) ESTABLISH COMMAND

   a) First arriving officer shall assume Command and begin an immediate size up of the situation.

   b) First arriving Trained Rescue Team(TRT) unit that is staffed with a TRT Officer should be assigned Rescue Sector. The TRT Officer assigned as Rescue Sector should remain with his crew. Rescue Sector responsibilities include:

      i. Assuming technical rescue operations control.

      ii. Identifying hazards and critical factors.

      iii. Developing a rescue plan and back-up plan.

      iv. Communicating with and directing TRT resources assigned to Rescue Sector.

      v. Informing Command of conditions, actions, and needs during all phases of the rescue operation.

   c) Designate a Safety Officer. Considerations for Safety Officer include:

      i. One of the Regional Special Operations qualified Safety Officers.

      ii. A Special Operations qualified Battalion Chief and/or FIT.

iii. Any experienced TRT Officer assigned to the incident.

d) Following the transfer of Command to a Command Officer, a Technical Advisor should be assigned to join the Command Team at their location to assist in managing personnel and resources engaged in the technical aspects of the incident. The Technical Advisor is responsible for ensuring that the rescue plan developed by Rescue Sector and communicated to Command is a sound plan in terms of the safety and welfare of both victim(s) and rescuers. Considerations for the Technical Advisor include:

i. A Special Operations qualified Battalion Chief and/or FIT.

ii. One of the Regional Special Operations qualified Safety Officers.

iii. Any experienced TRT Officer assigned to the incident.

The Technical Advisor position within the Command Team should be filled prior to the implementation of any rescue plan proposed by Rescue Sector.

2) SIZE-UP

a) Spot apparatus outside of any potential secondary collapse zone.

b) Secure a witness or responsible party to assist in gathering information to determine exactly what happened. If no witnesses are present, Command may have to look for clues on the scene to determine what happened.

c) Assess the immediate and potential hazards to the rescuers. Hazards associated with structural collapse include:

i. Secondary collapse.

ii. Explosion and fire.

iii. Broken gas and water lines.

iv. Energized electrical lines.

v. Falling debris.

d) Isolate immediate hazard area, secure the scene, and deny entry for all non-rescue personnel.

e) E. Assess on-scene capabilities and determine the need for additional resources. Consider establishing Level 2 staging and calling for heavy machinery and equipment such as cranes and front-end loaders.

PHASE II PRE-RESCUE OPERATIONS

1) MAKE THE GENERAL AREA SAFE

a) Establish a hazard zone perimeter around the collapse area.

b) Keep all non-essential rescue personnel out of the hazard zone.

c) Remove all non-essential civilian personnel at least 150 feet away from the hazard zone perimeter.

2) MAKE THE RESCUE AREA SAFE

a) Secure all hazards. If it is not possible to secure all hazards, rescue personnel operating in the area must be made aware of the hazard(s).

b) Establish a Lobby Sector. Command should establish a Lobby Sector to control the flow and maintain personnel accountability of rescue personnel in the collapse area.

c) Establish a Treatment Sector. Command should establish a Treatment Sector to identify and set-up a triage and treatment area a safe distance from the collapse area for the treatment and transportation of victims.

d) Establish a Building Triage team. Rescue Sector should establish a Building Triage team which shall consist of a Technical Rescue Technician trained

and knowledgeable in structural collapse shoring techniques, a structural engineer, and a Hazardous Materials Technician. This team will asses the structural integrity and hazardous conditions of the building(s) involved and will utilize a building marking system to indicate their findings. Consider establishing additional Building Triage teams if the area of collapse is widespread and involves numerous buildings.

e) Establish a Search team. Rescue Sector should establish a Search team to search the collapse area and locate victims. A Search team shall consist of TRT personnel trained in the use of specialized search equipment, and search canines with their handlers (if available). Consider establishing additional Search teams if the area of collapse is widespread and involves numerous buildings.

f) Establish a Rescue team. A Rescue Team shall consist of TRT personnel trained in the use of specialized rescue equipment and techniques. Consider establishing additional Rescue teams if the area of collapse is widespread and involves numerous buildings.

g) Establish a transportation corridor. Command shall ensure roadways are clear in and out of the collapse site so that apparatus and other heavy equipment and machinery have access to the site. Consider establishing a liaison with the Police Department to accomplish this function.

PHASE III RESCUE OPERATIONS

Technical rescue operations shall be conducted under the direction of Rescue Sector by trained Technical Rescue Technicians.

1) RESCUE SECTOR

Rescue Sector responsibilities shall include the following:

a) Ensure that all personnel operating in Rescue Sector are accounted for and wearing appropriate PPE.

b) Develop a rescue plan and a back-up plan.

c) Ensure the plan and a back-up plan, which include emergency procedures, are communicated to all personnel operating on the incident.

2) THE RESCUE PLAN

Rescue operations should be conducted with as little risk to the rescuers as necessary to affect the rescue. Low-risk operations may not always be possible but should be considered first. The rescue plan shall be developed through consultation with Rescue Sector, Safety, Command, and the Technical Advisor. The plan and a back-up plan, which include emergency procedures, shall be communicated to all personnel operating on the incident.

3) THE RESCUE

a) <u>REMOVAL OF SURFACE VICTIMS</u>

Remove surface victims. First responders should be assigned to remove victims and the "walking wounded" from the surface of the collapse area. Rescuers shall use extreme caution during the early stages of rescue operations due to significant hazards which have not yet been identified.

b) Personnel Accountability Report

After the removal of surface victims and the "walking wounded", all rescue personnel should be removed from the collapse area and a personnel accountability report (PAR) shall be obtained. This will allow for a re-grouping of rescue personnel and the implementation of a detailed search and rescue plan to locate and remove any other victims from the collapse area.

After surface victims and the "walking wounded" have been removed from the collapse area, all non-TRT rescue personnel shall be removed from the collapse area and Technical

Rescue operations shall begin under the direction of Rescue Sector by trained Technical Rescue Technicians.

Command shall establish a specific action plan for the search and rescue of the remaining victims. This action plan shall be distributed to all rescue personnel that will be operating at the collapse site.

c) Building Triage.

Assign the Building Triage team to identify, select, and prioritize the building(s) with the highest probability of success with respect to finding and rescuing live victims. Additionally, the Building Triage team shall be responsible for using a building marking system to indicate structural conditions and hazards present to search and rescue personnel.

d) Locate victims

Following the structural and hazard assessment by the Building Triage team, the Search team(s) shall be assigned to locate entrapped victims by utilizing search canines (if available), and specialty search equipment such as search cameras and acoustic listening devices. Search teams shall not enter buildings which have been determined to be structurally unsafe until appropriate shoring and stabilization measures have been taken.

e) Extricate entrapped victims

Once the Search team has located an entrapped victim, the Rescue team(s) shall be responsible for utilizing their specialized rescue equipment and techniques to extricate victims from the collapse area. The breaking and breaching of walls, floors and roofs, will typically be associated with shoring and other methods of stabilization which make these operations manpower and resource intensive. Consider calling for additional resources and establishing a Resource Sector. Rescue teams shall not enter buildings which have been determined to be structurally unsafe until appropriate shoring and stabilization measures have been taken.

f) BREACHING WALLS, FLOORS, AND ROOFS

If at all possible, rescue teams should attempt to gain access vertically. The horizontal breaching of walls should be done only if there is no other means to reach the void space that victims may be trapped in. Horizontal breaching of load bearing walls may precipitate a secondary collapse of the structure. The potential for secondary collapse is less if rescue teams breach structural members from above or below. Prior to breaching a structural load bearing member, a specially trained structural collapse specialist (structural engineer, architect, technical rescue specialist) should approve and oversee the breaching operation. If the atmospheric conditions are not known in the room of desired entry, a "pilot" hole shall be punched to monitor the atmosphere prior to breaching operations.

g) Selected debris removal

If the Search team(s) has not been able to locate victims through other methods, or if a victim location is known, either by credible witness or search team verification, debris may be selectively removed to gain access to the victim and/or otherwise unsearchable locations within the collapse area. Special care must be exercised while removing debris to avoid a secondary collapse. Heavy equipment such as a crane may be necessary to accomplish selected debris removal. The selected debris removal process should be stopped periodically to conduct search operations for additional victims. Once the debris has been removed and search operations determine that there are no other victims in the area, rescue personnel shall be accounted for and removed from the area.

h) General debris removal

Once it has been determined that no other live victims can be located in the collapse area, a general debris removal operation may be started. Removal crews shall be alert to possible deceased victims and/or victim body parts and the coroner and/or other investigative personnel shall be notified to handle the removal of the remains. As debris is removed, each load should be marked as to the general location found and final location of the debris to aid in the investigative process. Command may elect to turn general debris removal over to the responsible party (RP) for final disposition of the building. If this option is exercised, the RP should be informed as to the proper handling of debris for investigative purposes.

4**) TREATMENT**

a) Conduct a primary survey upon reaching the victim.

b) Initiate C-spine precautions as soon as possible.

c) Conduct a secondary survey and correct any life threatening conditions.

d) Consider removing the victim from danger prior to providing definitive care.

e) Provide ALS level treatment and transportation to a hospital as indicated.

PHASE IV TERMINATION

a) Ensure personnel accountability.

b) Consider decontamination of rescuers.

c) Recover all tools and equipment used in the rescue/recovery. In cases of a fatality, consider leaving everything in place until the investigative process has been completed.

d) Consider a Post Incident Critique (may be more appropriate at a later date).

e) Return to service after returning all equipment to apparatus.

ADDITIONAL CONSIDERATIONS

a) Heat - Consider rotation of crews.

b) Cold - Consider the effect of hypothermia on victims and rescuers.

c) Ambient Conditions - Consider the effects of rain or snow on the hazard profile.

d) Time of Day - Consider having proper lighting on scene for night time operations.

e) Consider the effect on family and friends; keep family informed.

f) Consider news media; assign a P.I.O.

g) Consider the effect on the rescue personnel; notify CISD Team if needed.

h) Consider appropriate facilities for personnel (food, drinks, bathrooms, rest areas etc.).

BUILDING COLLAPSE SAFETY CHECKLIST

a) Assure all water, gas and utilities are secured.

b) Provide for sufficient illumination.

c) Provide for sufficient ventilation.

d) Clear the area of personnel not directly involved in the search and rescue operation.

e) Station a safety officer in a position to observe for unsafe conditions and the potential for

f) secondary collapse. Keep apparatus and equipment away from the structure.

g) Stop all traffic for 200 yards in all directions to avoid vibrations.

h) Control spread of fire caused by cutting torches.

i) Assure all rescue personnel are properly protected.

j) Rescuers should work in pairs, assigned to a team and frequent relief should be planned.

k) Coordinate activity when there is more than one operation.

l) Check for and control hazardous gases, chemicals, sewage, etc.

m) Provide for atmospheric monitoring in all confined spaces.

n) Prohibit smoking on site and in the hot zone.

o) Watch for overzealous rescuers.

p) Avoid unnecessary disturbance of loose debris.

q) Do not remove natural shores and supports such as doors and beams which have fallen or are prone to fall.

r) supporting debris. Do not cut timbers which support debris.

s) Work around heavy obstructions, when possible, instead of cutting through them.

t) When working around a victim, remove debris by hand to avoid further injury.

u) Utilize three (3) systems to evacuate members if needed (audible, radio, and light).

If this is a large concrete reinforced structure that has collapsed, consider the following:

a) Accept the fact that you will have little control of bystanders and personnel working on the pile for a period of time.

b) Request a heavy police response to control the area.

c) Request a fencing company or the military to fence the entire perimeter of the building with chain link fence, concertina wire or other type fence to control access.

d) Request the power company and have them string temporary poles and lights around the entire perimeter.

e) Once there is adequate police presence, clear the entire rubble pile and collapse site and start from scratch by assigning teams to specific sectors.

COMMAND TACTICAL WORKSHEET STRUCTURAL COLLAPSE OPERATIONS

PRIMARY ASSESSMENT

a) Secure witness or RP

b) Determine location, number and condition of victim(s)

c) Determine location and number of buildings involved

d) Rescue/recovery mode

SECONDARY ASSESSMENT

a) Occupancy type (business, mercantile, assembly)

b) Building construction type

c) Assess hazards (secondary, collapse, gas, electric) - control hazards

d) Assess need for additional personnel (search dogs, Red Cross, structural engineer)

e) Assess need for additional equipment (100 ton crane, heavy equipment)

f) Assess traffic conditions (establish transportation corridor)

SECTORIZE

a) Safety

b) Building triage

c) Search (technical) - begin marking system

d) Access

e) Extrication (technical)

f) EMS (treatment, transport)

g) Staging

h) PIO

i) Police Liaison

j) Haz Mat

k) Operations (technical)

RESCUE OPERATIONS

a) Make general area safe (traffic control)

b) Remove surface victims

c) Make rescue area safe (secure utilities)

d) Establish perimeter (access)

e) Establish transportation corridor

f) Establish victim staging area (accountability)

g) Remove all non-essential personnel from rescue area

h) Establish building triage team(s)

i) Establish action plan for building search team(s)

j) Establish action plan for rescue team(s)

k) Personal protective equipment

l) Transfer victims to MICU

m) Selective debris removal

TERMINATION

a) PAR (personnel accountability)

b) General debris removal

c) Remove equipment

d) AAR CISD (Critical Incident Stress Debriefing)

CHAPTER 8 – JOB CHART OF ALLIED DEPARTMENTS

CHIEF OF OPERATIONS (DIRECTOR, DM):

The Chief of Operations is responsible for the functioning of Hyderabad city disaster management organization. The position provides leadership, coordination, and management of all emergency operations being implemented by the City, in both the field and in the City's control room.

The position also serves as the City's authorized policy maker and official spokesperson regarding the disaster situation and the City's disaster management actions.

This position is also responsible for ensuring coordination of all City emergency operations with those of line departments in city, District Collectorate, adjacent jurisdictions and higher levels of government.

The Chief of Operations provides direct oversight and coordination of all City operations conducted at the City Control Rooms, including final approval of each DAP and instructing the City's Disaster Management Organization on the DAP implementation.

The position would also be responsible for allocating the contingency fund for emergency operations based on the contingency plan of the GHMC. Fund requirement can also be decided based on the magnitude of the disaster.

DISASTER MANAGEMENT, GHMC

Before:

- To set up an Emergency Operations Center.
- Conduct coordination meetings with representatives of all line departments/NGO's.
- Maintain and update the contact & inventories list of all line departments and host in GHMC website.
- Establish and maintain communication facilities like HAM radio, mobiles, VHF, landline etc. on priority wherever required.
- Allocate funds for communication services.

- Develop and maintain the communication facilities that can be transported to incident sites for effective communication.
- Establish and maintain a special frequency for operating wireless communication with all departments control rooms.
- Coordinate with Telecommunication providers to establish bulk SMS and email communication with citizens to issue warnings.
- Establish fully equipped Rescue teams with unskilled and skilled/trained officers.
- Establish Quick Response Teams and Disaster Response Teams.
- Establish Hyderabad Disaster Rescue Force (HDRF) to attend search and rescue operations.
- To conduct Training programmes and mock drills/exercises to all QRT, DRT, DRF teams, skilled and unskilled labour, officers who are assigned to deal with any kind of disasters.
- Procurement of Men, Machinery, vehicles, etc., required for QRT and DRT.
- Nomination of Nodal officer at ward, Circle and Zonal level to command and control the operations of QRT and DRT.
- Locate, procure, and issue resources to other support agencies for use in emergency operations necessary to support the emergency response or to promote public safety.
- Coordinate the procurement of various equipment in coordination with respective departments.
- Coordinate activities with other response agencies to ensure a coordinated and efficient allocation of resources.
- To develop and update resource inventory available within GHMC and all other line departments.

- To keep a stock of material and equipment.
- Implement financial management, procurement and tracking system.

During

- To establish operations at Emergency Operations Center.
- Deploy representatives (who are well acquainted with departmental procedures) of all line departments in the EOC.
- Check the working condition of all the communication mechanisms through test calls.
- Analyze the potential of the emergency to know what types of resources would be needed.
- QRT/DRT/HDRF swing into action for search and rescue operations.
- To organize receiving of relief materials.
- To send reinforcements at the incident site if required.
- Determine needs and available resources.
- Protect resources from possible damage resulting from the disaster.
- Secure a workable location for the storage and distribution of goods and services required during the disaster.
- Coordinate resource requirements and requests of other line departments.
- Work closely with other departments to minimize duplication of efforts.
- Commit all local resources assistance requesting from neighboring jurisdictions or upper levels of government like SDRF, NDRF, Armed forces, etc.
- Maintain complete log of actions taken and report on needed resources along with their capacities and capabilities.

- Report on status and actions taken, to the EOC .

After

- Conduct review meeting with HOD's of GHMC, HODs of all line departments/organisations, NGOs, etc.
- Assess the impact of the disaster on the community.
- To start rehabilitation.
- To dismantle relief camp and support service in a phased manner.
- Review damage assessment and make an estimate of resources needed for recovery.
- Evaluation and improvements to the existing action plan from the lessons learnt.

EOC

Provide regular updates and coordinate with field level staff and higher authorities.

Check the working condition of all the communication mechanisms through test calls

Public Information Officer (CPRO, GHMC):

This position supports the Chief of Operations through management and coordination of all City activities related to public information, emergency instruction and media management.

The position will be activated by the Chief of Operations when warranted by the need for emergency instruction and public information within the City. All public information and media management activities by the City will be managed and coordinated by the position. Other components of the City's Disaster Management Organization will conduct any public information activities through this position.

Before

1) Update list of public information media (print, radio and TV, etc).
2) Participate in Mock Drills, Table Top exercises.
3) Maintain list of radio frequencies.
4) Develop frequency use procedures and protocols.
5) Establish the communication mechanism to issue warnings to the public through all possible media.
6) Disseminate information to the citizens about preparedness/readiness of GHMC to any structural collapse through print and electronic media.

During

11) When alarm triggered, report to the EOC.
12) Manage the emergency communications section in the EOC to include radio, fm, telephone, mobile phones, repair crews, amateur radio, backup resources etc.
13) Coordinate with Print and Digital media in communicating the warnings and notices to the public to the structure collapse incident.
14) Disseminate information about the structure collapse incident and actions taken by government through media.
15) Issue messages for public safety and mutual cooperation.
16) Organize a press briefing in EOC as appropriate.
17) Maintain a log of actions taken, reports of resources needs and capabilities.

After

1) Continue public information activities and update citizen on recovery efforts.
2) Prepare an After-Action Report to identify lessons learnt and improvements needed.

CHIEF MEDICAL OFFICER (CMOH):

This position supports the Chief of Operations by monitoring response operations, and all other available information to ensure protection of the health and safety of the City's emergency personnel, City residents, and other individuals with emergency functions within the City. The position will be staffed by the City's Medical Wing or designee.

The position will gather information from field operations by the City, from the EOC, or any other available source regarding known or potential health and safety threats, and will advise the Chief of Operations on the appropriate actions by the City.

The position will also monitor implementation of the emergency plans of the residential health care facilities located within the City and ensure their timely and effective implementation.

Identifying the list of standard and well equipped Hospitals / Ambulance services etc. for the treatment of victims in case of any disaster. The contact numbers of hospitals & doctors shall be obtained. Concerned AMOH shall identify such hospitals, Ambulance services available in their circles and inform the same to the CMOH. CMOH shall

Before

1) Identifying the list of standard and well equipped Hospitals / Ambulance services etc. for the treatment of victims in case of any disaster. The contact numbers of hospitals & doctors shall be obtained.
2) Conduct training programmes for Doctors, Paramedical Staff to handle mass casualty.
3) Conduct coordination meetings with private & public sector hospitals, dispensaries, medical institutions, blood banks, ambulance services etc.
4) Coordinate with the EMRI (108 / 104).

5) Enter in to an agreement for supply of food to rescue teams during emergencies.

6) Assist in coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.

During

1) Deploy a senior officer to the EOC.

2) Provide technical assistance to the EOC and validate requests for relief supplies/medical services.

3) Validate requests from affected areas for public health and sanitation resources.

4) Provide reports to the EOC & anticipate future public health & sanitation requirements.

5) Assist in Providing medicines, water and food in temporary shelters.

6) Provide food to rescue teams during emergencies.

7) Liaise with secondary & tertiary medical institutions for care of critically wounded.

8) Assist in distribution of relief materials to all, ladies like family heads, widows, old and disable persons should be given priority.

After

1) Compile information about injured & deaths and report the same to the Chief of Operations through EOC.

2) Prepare an After- Action Report to identify lessons learnt and improvements needed.

LIAISON OFFICER (DEPUTY COMMISSIONER):

This position supports the Chief of Operations by ensuring effective communication and information exchange with facilities, organizations, and key individuals outside of the City's Disaster Management.

To Liaison with all line departments, viz. Revenue department, Fire, Police, Irrigation, a Special officer can also be appointed either from Engineering Department or Public Works Department, as these departments along with Health and Urban community department (Community Development Societies), are mainly deal with emergency field operations.

Maintain liaison with all line departments and provide 24- hour emergency contact information including critical personnel, emergency chain of command, and notification procedures.

CHIEF TRANSPORT OFFICER, GHMC & TSRTC:

Before:

13) Maintain an updated comprehensive inventory of transportation resources available within GHMC and other line departments.

14) Determine present and future need for transportation resources.

15) Create a pool of private vendors to supply vehicles, machinery at the time of emergency.

16) Undertake Conditional maintenance of vehicles on priority basis.

17) Creating safety buffer stocks of fuel.

18) Operate fleet repair facility.

19) Develop emergency action checklists which includes status of transportation resources, fuel stocks, availability of staff (vehicle drivers).

20) All the vehicles deployed and kept ready for disaster management shall be checked and started for a while periodically. Fuel should be top up daily

21) Shall keep small earth moving equipments in road worthy condition.

22) Keep matching no. of drivers in spare round the clock.

23) Map the city and identify the location of nearest yard for any location in the city through CCP.

During

24) When notified of a disaster incidence, report to the Chief of Operations.

25) Coordinate transportation activities with the appropriate tasked organizations.

26) Coordinate and supply transportation resources as requested by field staff.

27) Ensure transportation facilities for search and rescue teams, medical teams, supply of rescue equipment and water, food and accommodation materials to affected areas.

28) Coordinate with EOC and Monitor the incident location situation.

ENGINEERING DEPARTMENT, GHMC:

Before:

1) Analyze, Develop and Maintain the inventories of resources and equipment.
2) Develop emergency action checklists.
3) Assist in developing alternate arrangements of shelter for population living in structures that might be affected after the disaster.
4) Appoint additional contractual labour as per requirement.
5) Assess gaps in equipment support before any disaster.

6) Prioritize equipment to be used during disasters.

7) Coordinate training of engineers on damage assessment and restoration.

8) Provide names & contact numbers of officers to EOC who deployed on emergency vehicles.

9) Keep machine tools in working condition.

During

1) Nominate senior officer to the EOC when the is activated for emergency management.

2) When notified of an emergency situation, send response teams/personnel, equipment, and vehicles to the incident location.

3) Coordinate with QRT & DRT at flooding spots by deploying their representatives in the EOC.

4) Assisting in search and rescue efforts.

5) Provide for emergency clearance of debris to enable reconnaissance.

6) Providing emergency generators, fuel, and lighting, sanitation to support emergency responders at the emergency scene and at the control room.

After

1) Conducting damage assessment activities.

2) Restore all the damaged infrastructure.

3) Prepare an After- Action Report to identify lessons learnt and improvements needed.

URBAN COMMUNITY DEPARTMENT:

1) Coordinate with Rescue teams for evacuating vulnerable population from slum pockets.
2) Coordinate with Self help groups, NGO's, etc in assisting the rescue operations.
3) In Coordination with Revenue Department identify and operationalise the rehabilitation centers to provide shelter to the evacuated population.
4) Assist Revenue and CMOH in coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.

TOWN PLANNING DEPARTMENT:

Before

1) Keep a log of safety of buildings and structures.
2) Tag buildings and structures based on damage and communicate information to EOC and supporting agencies to secure them.
3) Issue notices to residents who are living in dilapidated buildings.
4) Initiate process to demolish unsafe buildings.

During

1) Identify clear open spaces close to traffic and transport links for organize / setting up relief camps.
2) Identify clear open spaces close to incident site to transport debris.
3) Tag buildings and structures based on damage and communicate information to EOC and supporting agencies to secure them.
4) Identify and notify evacuation routes to engineering department.

After

1) Certification of Structure stability/livability conditions of the incident structure and its surrounding structures.

R&B DEPARTMENT:

1) Ensure the city roads in good condition - patch works & pot hole repairs on the city roads.
2) Certify structural integrity of government buildings prior to any re-entry.
3) The Dept shall particularly maintain Government building such that none of the buildings are prone collapse.

HMWS & SB:

1) Providing Drinking water supply to the relief camps.
2) Assist in relief supplies for mass care.

TSSPDCL/ TELECOMMUNICATION DEPARTMENT

1) A senior official nominated as nodal officer shall report at EOC.
2) Nodal officer will receive and give briefings and updates to EOC staff.
3) Put off power supply immediately at the incident site, if needed.
4) Arrange alternate/temperory power supply at the incident site, if required.
5) Ensure the power supply to the relief centers.

POLICE DEPARTMENT

Before

1) Conduct a mock drill for the law & order situation during floods
2) Conduct Training programmes to police personnel for rescue Operations.

During

1) The police department shall kept on high alert when a disaster is notified.
2) Deploy senior officer at EOC.

3) Keep the civilians out of the hazardous environment by barricading the incident site.
4) The police must instill public confidence that their properties and belongings are properly guarded in the event of evacuation.
5) They should install communication devices like wireless sets, mobile phones, and satellite phones at earmarked places by deputing personnel for passing of messages.
6) Assist the rescue teams in evacuating the population, search, rescue and relief operations.
7) Ensure law and order situation in affected area.
8) Protect life and property, and keep close watch on anti-social elements

After

1) Assist to evacuate stranded, trapped citizens into relief centers.
2) Maintain records containing all relevant information relating to action points and contact points.
3) Prepare an After ActionReport to identify lessons learnt and improvements needed.

TRAFFIC POLICE:

Before

1) Identify the alternate root's available for each road network to divert the traffic in case of emergency to provide green channel/traffic free channel for Rescue team vehicles to reach the incident site.

2) Identify the optimum root to transport debris from incident site.

3) Should maintain the Contacts of all departments in GHMC

During:

1) Identify convenient parking lots and seek appropriate permission from the land owners.
2) Provide extra police personnel at traffic diversions.

3) Provide green channel/traffic free channel for Rescue team vehicles to reach the incident site.
4) Provide information about traffic flow to the public through media, public address system, sign boards and display boards.
5) Clearance of vehicles which struck on roads in the way of rescue vehicles.
6) At the time of evacuation, identify the optimum ways to transport the population to relief centres.

MEDICAL & HEALTH DEPARTMENT

Before

1) Conduct training programmes for Doctors, Paramedical Staff to handle mass casualty.
2) Conduct coordination meetings with private & public sector hospitals, dispensaries, medical institutions, blood banks, ambulance services etc.

During

1) Mobile Medical teams shall be posted at incident sites to render medical aid to the victims.
2) Ambulance services and nearby Hospitals should be identified and make arrangements to transport the victims to the hospitals.
3) Provide technical assistance to the EOC and validate requests for medical services.
4) Provide medicines, water and food in temporary shelters.
5) Liaise with secondary & tertiary medical institutions for care of critically wounded.
6) Arrange dead body disposal, victim identification, mass fatality management and decontaminating the remains.
7) Deploy of personnel and resources within the framework of EOC direction and decision making process.

After

1) Compile information about injured & deaths and report the same Chief of Operations through EOC.

2) Prepare an After- Action Report to identify lessons learnt and improvements needed.

FIRE:

Before

1) Conduct Training and Refresher Courses for Rescue Teams.

2) Repair and maintain rescue equipment.

3) Prepare plans for the utilization of resources, personnel, equipment and supplies in the most effective manner.

4) Keep fire stations and Regional Command Centers fully equipped with manpower and machinery for rescue operations.

5) Conduct mock drills, awareness programs etc.

During

1) Evacuation of people who are trapped in building top, on the trees and hillocks.
2) Dispense resources required based on need and augment men and machinery if necessary.
3) Direct operations from a safe distance and ensure ability to escape.
4) Assist in rescue, search and evacuation operations.

After

1) Prepare and submit the action taken reports to the Chief of Operations through EOC.
2) Review and improvise the existing action plan based on the lesson learnt during flood fighting activities.

REVENUE DEPARTMENT:

Before

1) Identify adequate and appropriate relief/rehabilitation shelters in each ward.
2) Identify suppliers of relief materials.
3) Coordinate procurement and allocation of relief supply.
4) Ensure functionality & stability of shelters.
5) Enter into a contract with the Civil Suppliers for immediate arrangement of food and relief materials during a crisis.

During

1) Deploy a senior officer to the EOC.
2) Ensure coordination of activities related to emergency provisions of temporary shelters, emergency mass feeding and bulk distribution of relief supplies to the disaster victims, disaster managers and relief workers.
3) Provide technical assistance to the EOC and validate requests for mass care resources.
4) Assess the disaster situation and determine mass care response needs.
5) Develope alternate arrangements of shelter for population living in structures that might be affected after the disaster.
6) Coordinate shifting of population from affected sites to relief centers/safe sites.
7) Provide adequate and appropriate shelter to the affected population.
8) Make emergency food supplies available to the affected population.
9) Coordinate relief supplies for mass care and medical facilities.
10) Assess the disaster situation and determine the adequacy of mass care response activities.
11) Provide technical assistance to the other agencies like NGOs providing mass care.
12) Ensure proper distribution of relief to all, ladies like family heads, widows, old and disable persons should be given priority.

After

1) Set up community kitchens in temporary shelters and open spaces and ensure nutritious food for victims.

2) Provide separate toilets, baby foods, sanitary towels etc for women and children and take care of pregnant women, adult girls, babies, disabled and old person in the camp.

3) Prepare briefings on status of response operations.

4) Compile and maintain the information of relief supply and submit these to EOC.

5) In coordination with GHMC, extend financial support to organize the relief camps and to release exgracia to the damaged properties and population.

6) Prepare an After-Action Report to identify lessons learnt and improvements needed

TSRTC

1) Transportation policy should reflect that all Hyderabad city's transportation resources will be utilized on a priority basis to save lives and property.
2) Identify and Notify the diversion roots of Bus transportation in the event of disasters from a particular road.
3) Arrange the vehicles to evacuate the people to rehabilitation centers/safer places.
4) Create safety buffer stocks of fuel.
5) Develop emergency action checklists which include status of transportation resources, fuel stocks, availability of staff (vehicle drivers).

ROLES OF PRESS & MEDIA:

The role of Press & Media is particularly important as it helps in allaying the fears of public. The Presss & Media should be in touch with the administration for flashing news of relief operations. This will help to educate the people about the possible hazards, steps to mitigate distress and role Government/NGOs are playing

FIRE & HEAT WAVE

INTRODUCTION

1. What is fire?

Combustion or burning is a phenomenon, in which substances combine chemically with oxygen from the air and typically give out bright light, heat, and smoke. But fire is really something completely different. Earth, water and air are all forms of matter – they are made up of millions of atoms collected together. Fire isn't matter at all. It's a visible, tangible side effect of matter changing form -- its one part of a chemical reaction.

Typically, fire comes from a chemical reaction between oxygen in the atmosphere and some sort of fuel (wood or gasoline, for example). Of course, wood and gasoline don't spontaneously catch fire just because they're surrounded by oxygen. For the combustion reaction to happen, the fuel has to be heated to its ignition temperature.

2. Types of fire:

Class A  fires involve solid materials of an organic nature such as

wood, paper, cloth, rubber and plastics that do not melt.

Class B  fires involve liquids. They include petrol, diesel, thinners, oils, paints, wax, cooking fat and plastics that melt.

Class C  fires involve electricity.

Class D 

fires involve flammable metals such as magnesium, aluminum, titanium, sodium and potassium.

GHMC is vulnerable to the following types of fire:

a. Fire in slum areas

b. Fire in Houses / building / High rises

c. Chemical fire

d. Industrial fire

f. Electrical fires

g. Fire trains / buses

Causes of fire -

h. Incidents of Fire caused mainly by overloading, short circuit etc.

i. Domestic incidents involving cooking gas, cooking oil etc.

j. Smoking in/around combustible materials could cause fire

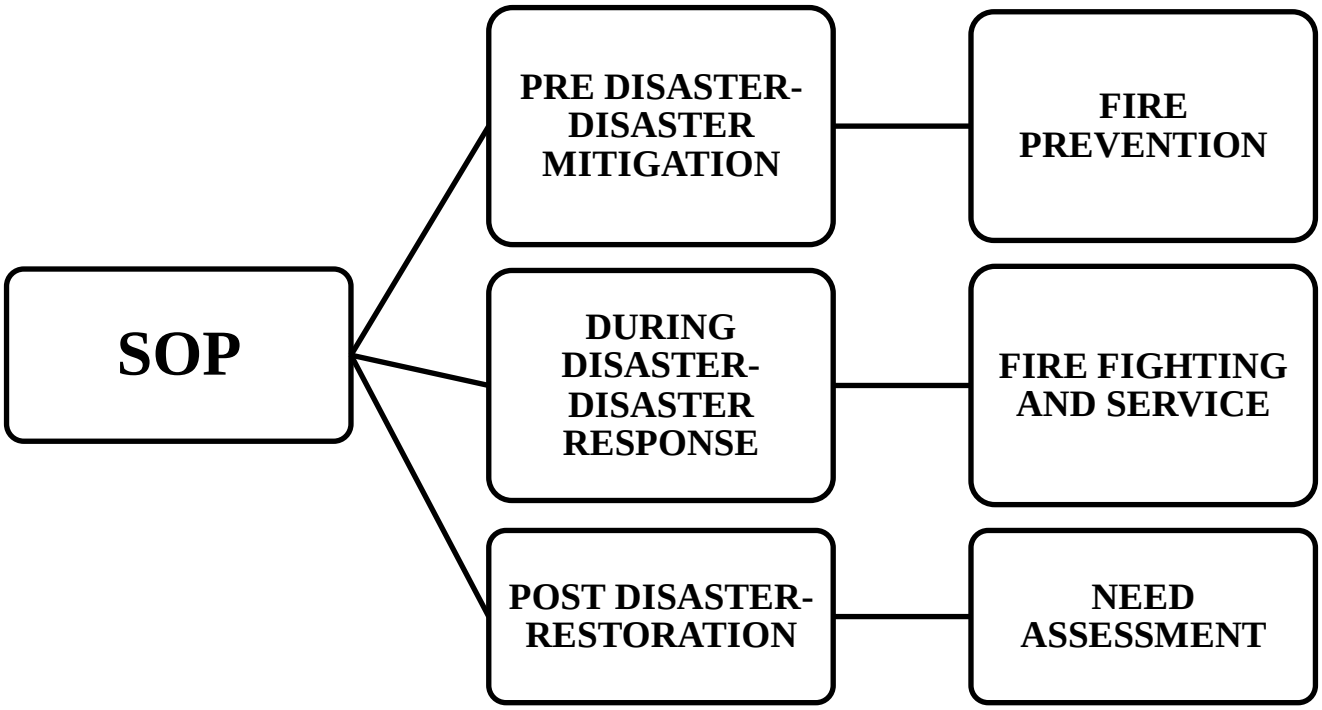
k. Weather: In summer : due to higher ambient temperature& leaves being dry - catch fire easily. This is also the time, when most forest-fires start.

l. Festive events – due to large scale use/availability of fire-crackers, and/or decorative lights etc. Fire crackers pose a direct fire-risk, while, lighting adds to the risk due to overloading.

SOP: A standard operating procedure is "an organizational directive that establishes a standard course of action." In other words, SOPs are written guidelines that explain what is expected and required of fire service personnel in performing their jobs. A comprehensive set of SOPs defines in significant detail how the department intends to operate.

Stated differently, SOPs don't describe how to do the job (technical skills), they describe the department's rules for doing the job (procedural guidance). Operating an emergency vehicle requires both technical skills and procedural guidance.

STAGES IN STANDARD OPERATING PROCEDURE



PRE DISASTER - FIRE PREVENTION:

- **LONG TERM PREVENTIVE MEASURES**:

1) State fire prevention wing should ensure all the buildings(high rise residential, commercial/industry) to maintain standards of national building code and fire free by giving the NOC.
2) To coordinate with relevant departments regarding enforcement of Building Codes, Fire Safety Rules and Certification of Building etc.
3) All commercial establishments have to have fire evacuation plan, refuge areas and fire signages for the easy evacuation in the event of fire out break.
4) Strict regulations on the quality of electric and gas lines and fixtures especially for commercial and institutional buildings.

5) Shopkeepers may not be allowed individual generators in case of multi-story commercial buildings, instead, owners may be asked to arrange central generator, preferably placed outside the building in a generator room.

6) Building approving authorities should have a mechanism to inspect the adequacy of active fire safety measures before approving it to be fit for use.

7) There should be no relaxation on the provisions of standard fire safety measures for commercial and institutional buildings as these are highly vulnerable to fires and generally house many people at on time.

8) There is an urgent need to develop fire safety guidelines and educate public, building owners, designer and government agencies regarding the damaging effects of fire and importance of including fire safety in the design of important buildings.

9) Computerized data management system should be introduced to keep the record of all fires including frequency, extent, fatality, economic losses etc.

10) Special burns wards should be established in every civil hospital and in the hospitals near the industrial estates.

11) Equipping fire services with robust communication facilities

12) The roles and responsibilities of administration, police, fire services and medical services should be clearly laid down.

13) **Capacity Building:**

   a. Provide regular training to the fire staff in using and maintaining the equipment.

   b. Organize regular demo for fire brigade to familiar them with fire equipments.

   c. Conduct mock drills to check up the departmental preparedness.

14) **Awareness Generation:**

a. 1. Organize awareness programmes on fire safety in schools, colleges and offices

b. Disseminate fire safety tips among public through print and electronic media

c. Develop IEC materials on dos and don’ts for public distribution

d. Organize training program for NGOs, NSS, NCC students.

15) Establishment(High rise residential, commercial/industries) owners or authorities concerned shall

a) Conduct the mock drills as follows:

i) Whenever any fire is noticed in any part of the establishment, the person(s) noticing fire must shout “Fire”, “Fire”, “Fire” to draw attention of all persons around to put off the fire immediately. To supplement this, whistles provided to the security staff would be blown in short spurts. The Security Guards present in the premises shall inform all members about the location of fire, as passed on to them by the Security Officer, on the walkie talkie who shall also be leading the Fire Fighting Team.

ii) All occupants should move down the stairs quickly, in a manner to avoid any stampede. They shall also be responsible to control the quick and safe exit of the students of their respective departments. Unless specifically told to reach the location of incident of fire, they would invariably collect in the area of cricket ground, allowing the firefighting team to effectively put off the fire. The stairs closest to the rooms would invariably be used for the exit, unless prevented by the fire.

iii) Receptionists on duty duly guided by Administrative Officer would immediately inform the Fire Department No. 101 and request for the fire tender.

b. Conduct the training and campaign to the occupants about using of fire extinguishers and other fire preventive equipments.

c. Install smoke detection systems and maintain smoke suppression systems.

d. Make the flour accessible to firefighters, Use the flame-retardant materials in interiors and Comply with National Building Code

e. Display telephone numbers of fire brigade, ambulance, fire officer, fire control room and other concerned persons / agencies in important locations of the building.

f. Provide a fire control room preferably at the ground floor entrance of the building.

g. Install hose reels and other fittings in the building. Ensure that all the hose reels and fittings are regularly serviced and kept for operation in the event of a fire.

h. Install automatic sprinklers in the building.

➢ SHORT TERM PREVENTIVE MEASURES:

All occupants (employees, workers, students etc.,)of a buildings(High rise residential, commercial/industries) must ensure that all precautions and measures are taken to ensure that no fire takes place. The following precautions/ measures must be taken:

1) Any loose connection, short circuiting, spark from the plugs and fuse blowing off, must immediately be reported to the Maintenance department in writing. Overloading of sockets by multi plugs should be avoided.

2) All plugs should be pulled out by occupants from rooms/ cabins in the evening before departure and appliances switched off.

3) Security Officer should get all MCBs switched off in the evening, other than those of corridor/ external lights.

4) Security guard should check all plugs are pulled out and all switches are off before locking the room. The switches include those of computer and chord switches also. All rooms where switches are on or plugs are not pulled out will be given next morning as a written report for follow up action. Security Officer shall monitor this.

5) Burning of candles and incense sticks is strictly prohibited. In cases where the wax sealing of documents is required, the same must be done with due care. Similarly, during any inauguration ceremony, requiring lamp lighting, the concerned coordinators should ensure that all safety measures are in place. Similarly, lighting of incense sticks in the Reception Area should only be done in the presence of the Receptionist on duty who should keep a close watch on the burning incense sticks during the day.

6) Strict fire precautions in workshops should be ensured. In the event of any fire, the fire extinguishers should be brought to effective use by the lab staff. It is therefore essential that each lab must have persons trained in the use of fire extinguishers.

7) Papers or other material requiring destruction by burning would be done outside the campus area by the Housekeeping staff, under the supervision of Security staff.

8) Fire precautions must be ensured. leaving the iron on or other combustible material, overloading of sockets, leaking gas cylinders, short circuiting etc. is to be absolutely avoided. Necessary instructions be issued to all concerned and checks carried out by the respective matrons on daily basis.

9) Maintenance department would lay down strict fire safety instructions pertaining to storage of diesel, operations of DG sets, air conditioning and electric wiring in all the buildings. Weekly checks of any loose wiring and connections in the building would be carried out by the Maintenance Supervisor.

10) Fire Fighting Officer shall carry out an assessment of the need of fire- fighting equipment after every new facility is created inside the campus and work out requirement of fire-fighting equipment. He would be required to put up the proposal for procurement of additional fire equipment. He will also ensure 100% serviceability of the existing equipment and get the equipment inspected annually by a certified body. He will also ensure that the required personnel are trained in using the fire extinguishers and that a mock drill rehearsing the actions in the event of any fire accident is carried out once a year involving all occupants as per the fire evacuation plan.

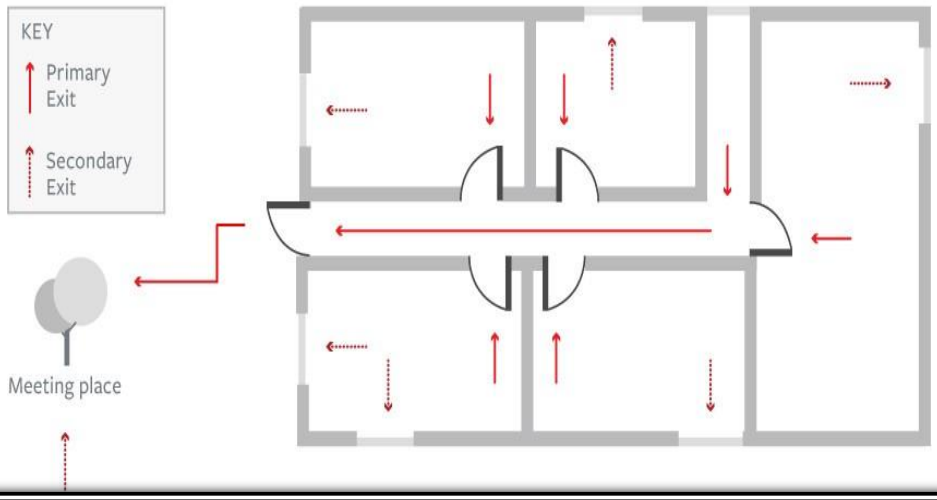
What is an "Area of Refuge"?

A safe, out of the way area where voice communication can be established. This area must provide the same protection and fire rating as the stairwell

Occupants that require assistance are not in the way of the main walk-path. They are safely out of the way until help arrives, while allowing others to safely evacuate

Webster's dictionary defines Refuge as:
"a shelter or protection from danger or distress"

Fire Evacuation Plan



Some special precautions for residential establishments:

1) Keep watching the leakages from LPG cylinder and take precautions while cooking to prevent the cooking fires.

2) Avoid smoking, dangerous heaters and other fire activities inside the house and near the flammable materials.

3) Keep watching electrical wires regularly to prevent the short circuit and further fire disaster.

DURING DISASTER – FIRE FIGHTING- RESPONSE:

The following sequence of action would be followed:-

GREATER HYDERABAD MUNCIPAL CORPORATION:

1. **DISASTER MAANGEMENT, GHMC :**

a) As soon as the fire emergency call received from the citizen, QRT team should reach the site as a quick response and coordinate with the fire department at the zonal level.

b) QRT vehicles should be traced with GPRS system from time to time at the EOC.

c) To coordinate the disaster response(search and rescue) operation

d) Activate all the concerned line departments as per requirement

e) If required dispatch NDRF to the incident site

f) Inform the military and paramilitary forces to get ready for emergency response

g) To monitor the incident situation and update the information to higher authorities.

h) Check the working condition of all the communication mechanisms through test calls.

i) Analyze the potential of the emergency to know what types of resources would be needed.

j) depending upon the range of fire occurred, DRF team shall assist the QRTs.

k) DRFs shall come into the operation as it consists of heavy equipments and manpower at the head office level.

l) To follow-up with water board department about the water tanker facilities created in the vulnerable areas and Department's readiness to provide the same in emergencies & act accordingly.

m) To follow-up with TSSPDCL about arrangements for the restoration of power supply and providing for supply of power through alternative sources of energy & act accordingly.

n) For further assistance state fire department/NDRF may be deployed.

FIRE DEPARTMENT

1) **Fire Fighting team** led by the Team In-charge, shall rush to the location of fire. The Team shall carry fire extinguishers, fire beaters, buckets of water and sand with them and embark upon the site under guidance of the Team Leader to put off the fire. It is very essential that all fire extinguishers and other fire equipment held on charge of the Fire Officer must be serviceable at all time.

2) The water source must contain sufficient water at all time (coordinate with the HMWS/ Water board).

3) **The Salvage Team** shall quickly remove all the equipment, documents and items of value from the site under fire or likely to come under fire and dump it centrally at one

place. Evacuate the adjacent sites where the fire is likely spread. The accident effected and burn cases would be evacuated to nearest hospital.

4) **The Protection Team** shall guard the items so collected from the fire site by the Salvage Party and will not allow any unauthorized person/s to touch the same.

5) Team In charge of each of the above said teams shall report to the heads of all the concerned departments on the status of fire incident through different 6) Modern Communication mediums (Telecommunications, Wireless sets, Radio FM, etc.,) who will give further instructions.

6) Fire fighting team should use the 2 wheeler mist bullets and modern bronto sky lifts.

HMWS/ WATER BOARD:

1) Ensure to keep spare water tankers separately for adequate supply of water during any fire outbreak without any interruption.

TRAFFIC POLICE DEPARTMENT:

1) Ensure to divert traffic within and surroundings of Fire incident point for easy flow of fir fighting vehicles.

2) Ensure to maintain law& order in coordination with civil police department

HEALTH &SANITATION DEPARTMENT(GHMC):

1) CMOH/ AMOH must Ensure to provide first aid and secondary medical services at fire incident point to aid the human causalities.

2) Shall identify nearby hospitals to shift the highly injured victims.

3) To coordinate with food suppliers agencies and provide food and other basic needs to the persons involved in fire fighting(officers, fire men, workers etc.,)

TRANSPORT DEPARTMENT(GHMC):

1) Shall send the transportation utility vehicles such as tippers, JCBs etc., to lift and transport the debris from incident site after receiving the complete report of forensic department's inspection.

POST DISASTER/RECONSTRUCTION:

1) Structural engineering dept./ town planning dept. or any third party shall inspect the structural stability & livability condition of the site as per the technical rules and regulations.

2) If the incident happened in a Government building, The head of the department concerned shall arrange for FIR to be filed and insurance company representatives to be called in for on the spot inspection.

SUMMARY:

SOPs serve many important functions in fire service operations. When individuals carry out the department's SOPs in their work, they implement the laws, plans, agreements, and policies incorporated in the procedures. Thus, SOPs constitute a key link between organizational policy makers, planners, administration personnel, and emergency service providers.

Fire and emergency service agencies need to consider a wide variety of documents, plans, and agreements when developing or revising SOPs. SOP documents also can be used to improve training, external communications and public education. To simplify use, SOPs should be organized in a logical framework of functions and topic areas. Separate sets of SOPs are usually developed for administrative functions and emergency response operations. The approach chosen for structuring SOPs should reflect the needs, management style, and culture of the department.

GREATER HYDERABAD MUNICIPAL CORPORATION

HEAT WAVE ACTION PLAN - 2018

INDEX

GREATER HYDERABAD MUNICIPAL CORPORATION

HEAT WAVE ACTION PLAN

Introduction:

Heat Wave Plan is a Plan intended to protect the population from heat related harm to health. It aims to prepare for, alert people to, and prevent, the major avoidable effects on health during periods of severe heat, while the days are sunny in summer, it should not be forgotten that the temperature can get too high, that it can become uncomfortably hot, and for some, it can become dangerously hot putting their life at risk.

As the Nodal agency, the GHMC has the overarching responsibility for the coordination of heat wave action plan related activities. This includes monitoring forecasts and sending heat wave alerts and disseminating public health messages to all line departments, Field lever officers, NGO', community service providers, press and media to diversify the scope of outreach. The Plan serves to focus attention on those individuals who are most at risk

during heat waves, including slum communities, outdoor workers, elderly and children. The Plan also focuses on individuals and organizations, such as Urban Health Centres (UHCs) and link workers, who frequently work with at-risk populations and can provide early diagnosis of heat related illnesses and preliminary treatment. Individuals, community groups, and the media are also essential in fighting the effects of extreme heat. Individuals can take specific preventative steps to protect themselves, their families, and their communities from harmful heat waves including learning about early signs of heat exhaustion, Limiting heavy work during extreme heat, drinking water, staying out of the sun; wearing light clothing, checking on neighbors, and informing their fellow community members about how to keep cool and protect themselves from heat. The media is vital in spreading the word about the harm heat poses to health, and protecting people against dangerous heat waves. The media plays an essential awareness-building role by sharing news about health threats, and increases public protection by running ads and providing local resources information.

What is HEAT WAVE?

Spells of abnormally high temperatures that occur in different parts of the country during April to June are referred to as heat waves. The term heat wave is a description of prevailing temperature conditions relative to daily normal value. The IMD (India Meteorological Department) has laid down the following criteria for describing a heat wave or a severe heat Wave or a Warm Night.

Criteria for Heat Wave

Heat wave need not be considered till maximum temperature of a station reaches at least 40º C for Plains and at least 30º C for Hilly regions.

When normal maximum temperature of a station is less than or equal to 40º C

• Heat Wave Departure from normal is 5º C to 6º C

• Severe Heat Wave Departure from normal is 7º C or more

When normal maximum temperature of a station is more than 40º C

• Heat Wave Departure from normal is 4º C to 5º C

• Severe Heat Wave Departure from normal is 6º C or more

When actual maximum temperature remains 45ºC or more irrespective of normal maximum temperature, heat Wave should be declared.

Warm Night is declared if actual maximum temperature of a station is more than or equal to 40ºC and minimum temperature departure is more than or equal to 5ºC.

Very Warm Night is declared if actual maximum temperature of a station is more than or equal to 40ºC and minimum temperature departure is more than or equal to 7ºC.

Heat Index

To calculate the effect of humidity we can use Heat Index Values. The Heat Index is a measure of how hot it really feels when relative humidity is factored in with the actual air temperature. As an example, if the air temperature is 34°C and the relative humidity is 75%, the heat index--how hot it feels--is 49°C. The same effect is reached at just 31°C when the relative humidity is 100 %. The temperature vs humidity chart is placed and the temperature actually felt is placed below:

Table 1: Temperature/ Humidity Index

Relative Humidity %	Temperature °C																
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43
40	27	28	29	30	31	32	34	35	37	39	41	43	46	48	51	54	57
45	27	28	29	30	32	33	35	37	39	41	43	46	49	51	54	57	
50	27	28	30	31	33	35	36	38	41	43	46	49	52	55	58		
55	28	29	30	32	34	36	38	40	43	46	48	52	54	58			
60	28	29	31	33	35	37	40	42	45	48	51	55	59				
65	28	30	32	34	36	39	41	44	48	51	55	59					
70	29	31	33	35	38	40	43	47	50	54	58						
75	29	31	34	36	39	42	46	49	53	58							
80	30	32	35	38	41	44	48	52	57								
85	30	33	36	39	43	47	51	55									
90	31	34	37	41	45	49	54										
95	31	35	38	42	47	51	57										
100	32	36	40	44	49	56											

Caution	Extreme Caution	Danger	Extreme Danger

Source: Calculated °F to °C from NOAA's National Weather Service

HEAT WAVE ACTION PLAN INCLUDES:

- Institutional role clarity, preparedness and collaboration
- Specific attention to vulnerable populations and the health risks specific to each group
- Stakeholder communication on preventive and adaptive behaviors
- Real-time surveillance and early warning systems (EWSs)
- Short and medium-term strategies for reduced indoor heat exposure
- Long-term preventative measures related to urban building design, energy and transportation
- Developing effective strategies, agency coordination, and response planning to shape a Heat Wave Action Plan that addresses heat-health risks;
- Implementing the Heat Action Plan and activating heat alerts
- Evaluating and updating the Heat Action Plan regularly.

Purpose of Heat-wave Action Plan

The GHMC Heat-Wave Action plan aims to provide a framework for implementation, coordination and evaluation of extreme heat response activities in GHMC that reduces the negative impact of extreme heat. The Plans primary objective is to alert those populations at risk of heat-related illness in places where extreme heat conditions either exist or are imminent, and to take appropriate precautions, which are at high risk.

The Heat Wave Action Plan aims to implement four key strategies:

1. ***Building Public Awareness and Community Outreach***

To communicate the risks of heat waves and implement practices to prevent heat-related deaths and illnesses. Disseminating public messages on how to protect people against extreme heat through GHMC app, Traffic display boards, media outlets and informational materials such as pamphlets and advertisements on heat stress prevention. Efforts also include the use of social media such as Twitter, FB, Bulk SMS, text messages, email, radio and mobile applications such as WhatsApp. Special efforts are needed to reach vulnerable populations through inter-personal communication as well as other outreach methods. Use of specially developed Information, Education & Communication (IEC) videos on heat waves to increase community awareness. Show IEC ads on Traffic Display boards. Focused awareness sessions for various vulnerable communities through UHCs. GHMC ward wise awareness campaign by UHCs. Awareness drive in targeted Hot-Spot areas of Hyderabad.

2. ***Utilizing an Early Warning System and Inter-Agency Coordination***

To alert residents of predicted high and extreme temperatures. The Indian Meteorological Department shares a daily forecast with the Heat Wave Warnings during the summer season. The TSDPS updates daily forecast and hourly Temperature, Humidity information through their official website which is accessible to all. The GHMC has created formal communication channels to alert all line departments HOD's, Zonal and Cirlce level

officers of GHMC, health officials and hospitals, emergency responders, local community groups, and media outlets of forecasted extreme temperatures. Explore possibility of issuing special alerts for identified Hot Spot areas in the city. Zone wise nodal person to be identified for inter-agency coordination.

Early warning systems can enhance the preparedness of decision-makers and their readiness to harness favorable weather conditions.. In response to the devastating mortality and morbidity of recent heat-wave events, many countries have introduced heat-wave early warning systems. Heat-wave early warnings are designed to reduce the avoidable human health consequences from heat-waves through timely notification of prevention measures to vulnerable populations.

The IMD is mandated to meteorological observations and provides current and forecast meteorological information for optimum operation of weather-sensitive activities. It provides warning against, Heat-wave warning, Heat-alert and severe maximum temperatures for the vulnerable localities. And TSDPS provides the real time hourly data of Maximum temperatures, Relative Humidity, etc.

Identification of Color Signals for Heat Alert

The GHMC will issue heat alerts, based on thresholds determined by the IMD, Hyderabad, as an additional means of communication by using the following color signal system

Red Alert (Severe Condition)	**Extreme Heat Alert for the Day**	**Maximum Temperture > 45ºC / Normal Maximum Temp increase 6º C to more**
Orange Alert (Moderate Condition)	**Heat Alert Day**	**Maximum Temperture > 43ºC / Normal Maximum Temp increase 4º C to 5º C**
Yellow Alert	**Hot Day**	**Maximum Temperture > 40ºC / Nearby Normal Maximum Temp**

(Heat wave – Warning)		
White Alert (Normal)	**Normal Day**	**Maximum Temperture < 40ºC / Below Normal Maximum Temp**

3. Capacity Building Among Health Care Professionals

To recognize and respond to the heat related illnesses particularly during the extreme heat events. Such trainings focus on primary medical officers and other paramedical staff, and community health staff so they can effectively prevent and manage heat-related cases so as to reduce mortality and morbidity. Special UHCs training module to be developed and implemented. Zone wise training programs for private general medical practitioners.

4. Reducing Heat Exposure and Promoting Adaptive Measures

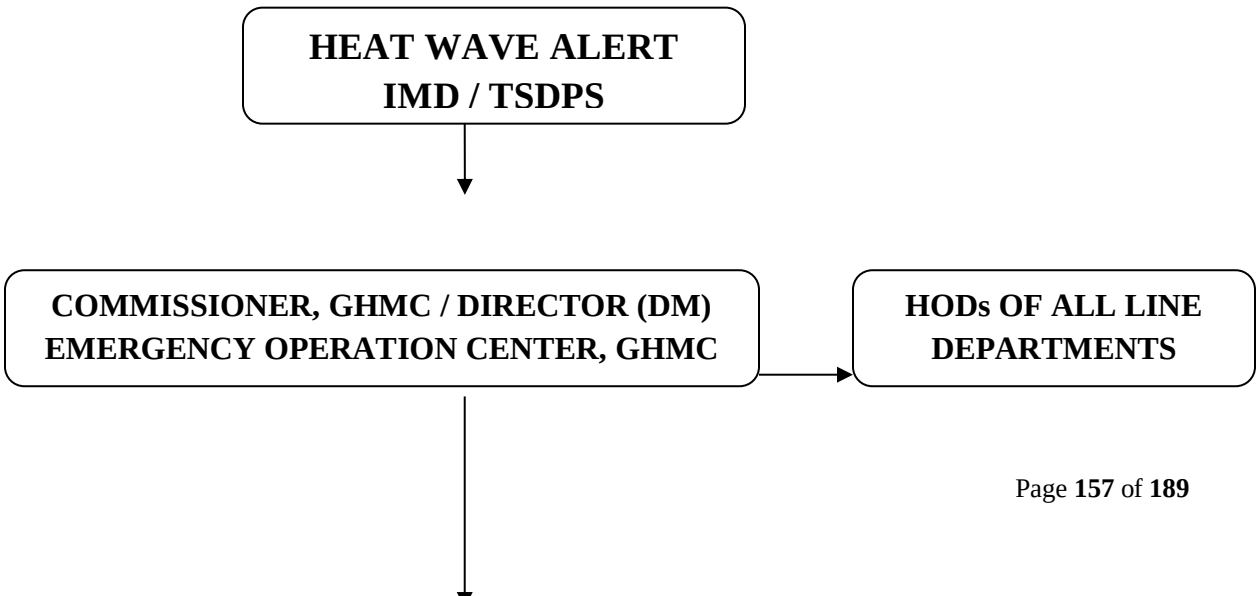
By undertaking new efforts including mapping of high-risk areas of the city, increasing outreach and communication on prevention methods, access to potable drinking water and cooling spaces during extreme heat days. Collaboration with non-governmental organizations is also identified as a means to expand outreach and communication with the city's most at-risk communities. Expand and enhance the number and scale of adaptive measures, particularly in identified. Hot-Spot areas of the city, that include supplying drinking water at various locations of the city, ensuring efficient water and electricity supply, providing relief facilities to vulnerable

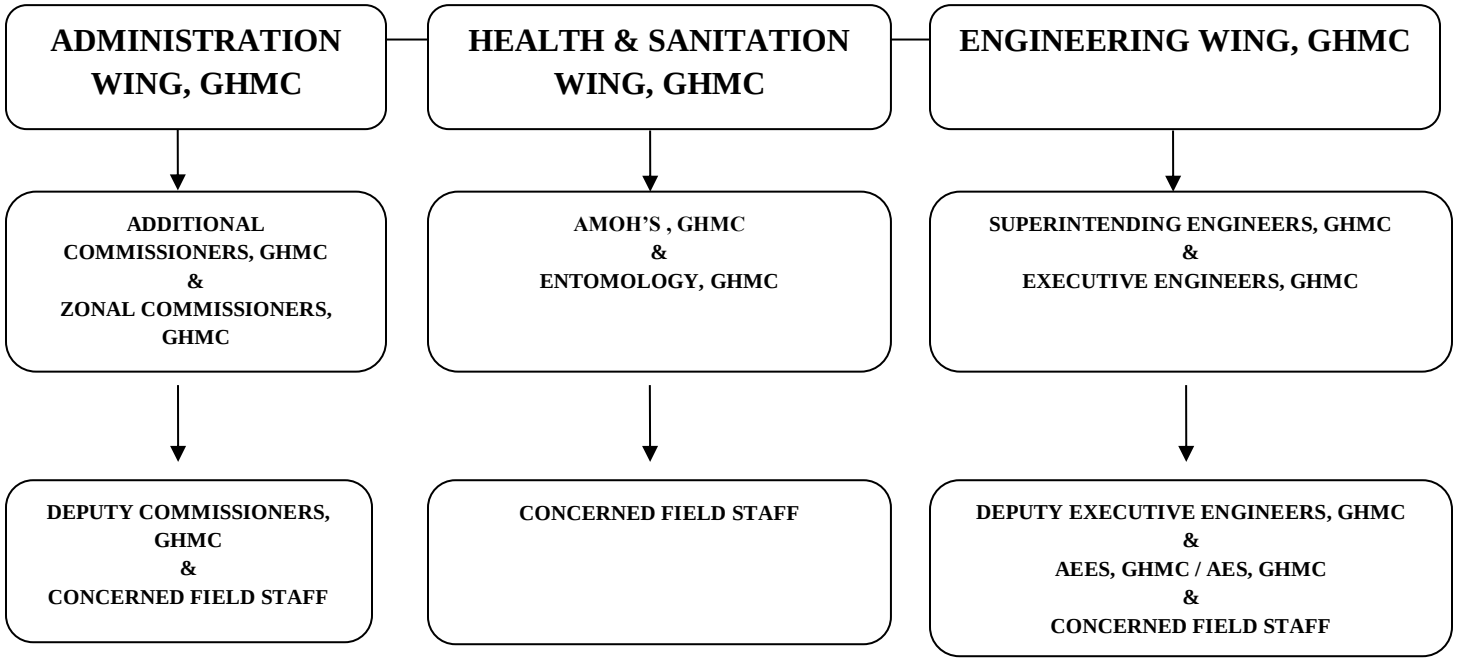
Occupational groups, among other activities. Simple options such as lime-based white wash, tarp-like coverings or white ceramic tiles, that are low cost, can help bring roof temperatures down by as much as 30 degrees centigrade and reduce indoor temperatures by 3 to 7 degrees centigrade.

Communication Plan When the GHMC Nodal Officer Activates a Heat Alert:

This organizational mapping serves as a framework to coordinate communication of heat protection tips and early warnings of heat wave response among of medical workers and

health clinics involved in the Heat Action Plan. This framework shows the linkages between the GHMC as the nodal agency down to grassroots-level response teams of Administration, Health and Engineering Wings of GHMC.





GHMC – Heat Wave Implementation Plan:

The plan is to be implemented in three phases:

Phase-I Pre-Heat Season (January through March)

Phase-II During the Heat Season (March through July)

Phase-III Post-Heat Season (July through September)

The Commissioner for Disaster Management & Ex-Officio Principal Secretary to Government (CDM & EOPS) as Nodal Officer to head the Heat Wave Action Plan at State Level and Commissioner Greater Hyderabad Municipal Corporation (GHMC) is the Nodal Officer for GHMC area .The Nodal Officer is responsible for coordinating and communicating ahead of, and during, extreme heat events. The Nodal Officer should adopt the steps given in three Phases.

Phase 1: Pre-Heat Season (Annually from January through March)

GHMC Nodal Officer:

- Convene Meeting with HOD's of all Line Departments/ Organizations / NGOs involved in rehabilitation /Agencies to review mechanism to respond to extreme heat events.
- Convene meeting with Administrative, Engineering, Health, IT, Veterinary wings of GHMC.
- Designate heat health point of contact for each department.
- Reengage key agencies to facilitate internal communications and schedule fortnightly / monthly meetings.
- Put in place an Early Warning System with strong surveillance and trigger mechanism.
- Organize preventative training and outreach efforts for health workers, link workers, school children, and the local community with the Health Department.
- Promote plantation drives.
- Distribute multilingual pamphlets and posters with tips to prevent heat stress to hospitals, schools, and professional associations.
- Create a list of the high-risk areas of the city vulnerable to heat waves for more focused activities on heat prevention.
- Establish heat mortality tracking system and update datasets.

CPRO GHMC:

- Increase public communication including distributing the multilingual pamphlet and advertisements on heat stress prevention and tips for health protection during extreme heat events.

- Put in place an Early Warning System with strong surveillance and trigger mechanism.
- Focus outreach efforts in identified high-risk areas.
- Provide information and heat communication materials developed by the GHMC to the public.
- Coordinate with Traffic Police to display Heat wave Alerts and temperature forecasts on Traffic Display boards.
- Identify areas to post warnings and information during heat season.

IT, GHMC

- Make a provision in My GHMC mobile app to push the heat wave or weather warnings to public emphasizing the most affected areas.
- Request all telecom service providers to send Heat wave messages to subscribers at no cost.

ADMINISTRATIVE WING, GHMC

- Convene meeting with all key stakeholders in their jurisdiction to review mechanism to respond to heat events.
- Ensure that high-risk areas vulnerable to heave waves were identified for more focused activities on heat prevention.
- Establish Cooling centers and Chalivendras at vulnerable places and crowdy places such as slums, bus stops, labour addas, construction sites, shopping malls, etc.
- Identify rehabilitation centers/ night shelters to provide shelter for the homeless during extreme heat.

ENGINEERING WING, GHMC

- Convene a meeting all the engineers and contractors and explain the importance of implementing the heat wave action plan.
- Promote construction of green and sustainable houses using heat reflecting construction material.
- Construct sheds for homeless during extreme heat.
- Instruct the contractors not to work during peak high temperatures i.e, from 11-4PM.
- Instruct the contractors to make it available the drinking water, ORS packets and shady places at construction sites.

GHMC HEALTH WING:

- Enhance targeted training programs, capacity building efforts and communication on heat illness for sanitation and entomology staff.
- Instruct sanitation and entomology staff preventive measures to be taken to save themselves from heat stroke.
- Instruct the staff not to work during peak high temperatures i.e, from 11-4PM.
- Measures to be taken to make it available the drinking water, ORS packets and first aids kits at working places.
- Take Measures to establish a mechanism to take the person with sunstroke to nearest health care ceter.
- Promote plantation drives.

URBAN COMMUNITY DEVELOPMENT, GHMC:

- Lead child-friendly educational preventative trainings and distribute heat protection materials at local schools. For example, potentially design a "Teach the Teachers" workshop designed to equip teachers with knowledge with heat protection tips and

materials that they can disseminate in classrooms on heat protection, and activities that can engage student's onhealth dangers of extreme heat.

- Conduct training workshops and outreach sessions with community groups, Self Help Groups and mobilizers such as ASHA workers, aanganwadis and Self Help Groups to help inform and also actively involve vulnerable communities. Other sectors such as higher education, NGOs and community leaders may also be involved to increase reach to communities.
- Encourage individuals to discussion of the early signs of heat exhaustion with their local doctor or Urban Health Centre.
- Inform community members about how to keep cool and protect oneself from heat.

GHMC VETERINARY/ANIMAL HUSBANDRY DEPARTMENT

- Review and discuss implementation of Hea twave Action Plan for safeguarding cattle and poultry.
- Prepare material like Posters & pamphlets separately for tips to take care of cattle and poultry during heat waves.
- Review availability of necessary medicines for treatment of cattle / poultry affected by heat wave.
- Prepare plan for availability of drinking water at cattle markets and slaughter houses for cattle

HMWS&SB

- Ensure that high-risk areas vulnerable to heave waves were identified for more focused activities on heat prevention.
- In Coordination with GHMC, establish Cooling centers and Chalivendras at vulnerable places and crowdy places such as Slums, bus stops, labour addas, construction sites, shopping malls, etc.

- Ensure water supply to the rehabilitation centers/ night shelters which provides shelter to the homeless during extreme heat.
- Measures to be taken to outreach the drinking water supply to all parts of city including slums during summer.
- Construct drinking water points at identified most vulnerable points.

INDIA METEOROLOGICAL DEPARTMENT (IMD)

- Issue Prior Warnings with details of temperature and humidity.
- Conduct awareness workshops for media and Departments.

TS State Health Department:

- Initiate targeted training programs, capacity building efforts and communication on heat illness for medical staff at hospitals and Urban Health Centres (UHCs), nursing staff and also paramedics, field staff and link workers, (ASHA Workers ANMS etc.). Identify the susceptibility of particular wards for special attention.
- Ensure hospitals update their admissions and emergency case records to track heat-related cases. Train hospitals to improve expedience of recording the cause of death certificates. The training could also include recording Information Education & Communication (IEC) efforts.
- Adopt heat-focused examination procedures at local hospitals and urban health centers.
- Promote use of reusable soft plastic ice packs for UHCs, 108 emergency centres, ambulances and hospitals.
- Explore creation of ice pack dispensaries to increase access to vulnerable communities.
- Separate beds for the Sunstroke victims may be provided – Director Medical Education (DME) and Telangana State Vaidya VidhanaParishat (TSVVP).

- Help desk with Toll free 104 may be established for further information on Heat Wave – S.O-104.
- Development of separate web portal for getting daily data on heat stroke cases from both private and public health Institutions.

108/104 EMERGENCY SERVICE:

- Create displays on ambulances during local events to build public awareness.
- Identify at-risk areas of vulnerable populations, in part by utilizing the list of high-risk areas.

Labour & Employment Department:

- Organize training for employers, outdoor laborers and workers regarding health impacts of extreme heat and recommendations to protect themselves during high temperatures.
- Utilize maps of construction sites to identify more high-risk outdoor workers. Potentially overlay with irradiation map from IMD or heat island map. Conduct publicity campaigns during high-risk days to these specific areas.
- All construction/work site contactors to provide drinking water, ORS, white colored caps and shelter to worker's laborers.
- Factory Management also to provide cool drinking water, ORS and shelter to worker's laborers.

TSRTC

- Review plan with Depot Managers/ Zonal Managers.
- Organize heat wave risk awareness programmes for Bus crew, staff at bus stands.
- Explain importance of proper shade, availability of drinking water and other facilities for passengers in bus stations.

- Distribute pamphlets/posters on heat related illness prevention; Do's and Don'ts for display & further distribution to passengers at Bus Stations, Bus Shelters.
- Ensure availability of proper shade, drinking water for passengers at bus stands.
- Ensure availability with of ORS, Ice pack, and Cool drinking water, in long distance buses.

EDUCATION DEPARTMENT

- Review plan with Education Department officials (School/Colleges, etc) organise awareness camps classes on heatwave related illness/sunstrokes for teachers and also students.
- Explain importance of proper shade, availability of drinking water and other facilities for Students.
- Distribute pamphlets/posters on heat related illness prevention; Dos and Don'ts for display & further distribution to students in Schools & Colleges.
- Ensure availability of ceiling fans in classrooms proper shade, drinking water for students.
- Ensure availability with of ORS, Ice pack, and Cool drinking water.

Phase 2: During the Heat Season (Annually from March through July)

GHMC Nodal Officer/ Disaster Management Cell / EOC:

- Activate a **heat alert** citywide when extreme heat events are forecasted by IMD by notifying Administrative, Health and Engineering wings of GHMC and HOD's of all line departments in GHMC limits.
- Monitor and increase the **heat alert** level when necessary to match the severity of the forecast and threshold established.

- Activate "cooling centers/Rehabilitation Centers," such as temples, public buildings, malls, during a **heat alert** and/or GHMC-run temporary night shelters for those without access to water and/or electricity.

- Expand access to shaded areas for outdoor workers, slum communities, and other vulnerable populations. For example, confirm that night shelters stay open all day for migratory populations during a **heat alert**.

- Hold a frequent, possibly daily, conference call to discuss reports and breaking developments during a **heat alert**, and ensure that communication channels remain operational.

- Ensure staff presence and availability of supplies with each department – including distributing fresh drinking water

- Communicate locations of emergency facilities and cooling centers/shades areas with each department.

- Continue surveillance of temperature data and forecasts.

- Communicate the suspension of all non-essential uses of water other than drinking, during any water shortage situation.

- Increase efforts to distribute fresh drinking water to the public. For example, expand potable water access during a **heat alert** at religious spaces including temples and mosques, BRTS transit stations, pouch handouts to the poor and high-risk areas.

- Communicate the local utility protocol to prioritize maintaining power to critical facilities (such as hospitals and UHCs).

- Convene a special meeting with all Line Departments/ Organizations / NGOs involved in rehabilitation /Agencies and key stakeholders in case of severe heat wave forecast.

CPRO, GHMC:

- Commence messaging to the public about the dangers of heat-related illness through print and electronic media.
- Circulate warnings via bulk sms, text alerts or WhatsApp mobile messages, in collaboration with private sector telecom companies utilizing centralized mobile databases, in addition to traditional media during a **heat alert**.
- Circulate warnings in bulk to the public via centralized email databases during a **heat alert**.
- Develop an SMS alert system to send direct messages to private practitioners in addition to the medical professionals at public hospitals and UHCs.
- Utilize local radio FM broadcasts to disseminate heat protection tips and high temperature warnings to the city's at-risk populations during a **heat alert**.
- Explore other means of communications, such as broader use of social media, for example, Facebook, Twitter and the WhatsApp mobile application.
- Identify and set up public displays of temperature and heat wave warnings, such as LED electronic scrolling boards.

ADMINISTRATIVE WING, GHMC

- Disseminate the Heat alerts received from Nodal officer/Emergency Operations Center.
- Ensure that high-risk areas vulnerable to heave waves were more focused in executing the plan.
- Ensure the Coordination of all wings in their jurisdiction for effective implementation of heat wave action plan.
- Ensure that Cooling centers and Chalivendras were established and functioning properly at vulnerable places and crowdy places such as slums, bus stops, labour addas, construction sites, shopping malls, etc

- Coordinate with NGO's/ Volunteers to establish Cooling centers/Chalivendras Voluntarily.
- Ensure rehabilitation centers/ night shelters are functioning properly to provide shelter for the homeless during extreme heat.

ENGINEERING WING, GHMC

- Ensure that no work is executed during peak high temperatures i.e, from 11-4PM.
- Ensure the availability of drinking water, ORS packets and shady place at construction sites.
- Promote construction of green and sustainable houses using heat reflecting construction material.
- Construct sheds for homeless during extreme heat.

GHMC HEALTH WING:

- Ensure that no work is being executed during peak high temperatures i.e, from 11-4PM.
- Measures to be taken to make it available the drinking water, ORS packets and first aids kits at working places.
- Ensure a mechanism is established to take the person with sunstroke to nearest health care center.

HMWS&SB

- In Coordination with GHMC establish Cooling centers and Chalivendras at vulnerable places and crowdy places such as Slums, bus stops, labour addas, construction sites, shopping malls, etc.
- Ensure the drinking water is supplied to all parts of city including slums during summer.

- Coordinate with NGO's/ Volunteers and provide necessary assistance to establish Cooling centers/Chalivendras Voluntarily.

INDIA METEOROLOGICAL DEPARTMENT (IMD)

- Communicate Heat wave alerts/warnings and maximum temperatures promptly.
- Update heat wave details regularly.

TS State Health Department :

- Post heat-related illness prevention tips and how to stay cool around hospitals and UHCs.
- Ensure adequate medical supplies available.
- Produce weekly reports of the public health impact for GHMC Nodal Officer during a **heat alert.**
- Increase staffing at hospitals and UHCs to attend to the influx of patients during a **heat alert**, if feasible.
- Increase link worker and community health worker outreach in at-risk neighborhoods during a **heat alert**, if feasible.
- Have zonal health officer visit UHCs to confirm proper preparation has been made for heat related issues.
- Illness and conduct case audits during heat season.

108/104 EMERGENCY SERVICE:

- Ensure adequate supply of ice packs and IV fluids.
- Disseminate SMS text messages to warn local residents during a **heat alert**.

LABOUR & EMPLOYMENT DEPARTMENT:

- Encourage employers to shift outdoor workers' schedules away from peak afternoon hours (1pm – 5pm) during a **heat alert**.
- Pilot project to provide emergency ice packs and heat-illness prevention materials to traffic police, and construction workers.

ANIMAL HUSBANDRY DEPARTMENT:

- Conduct training for Dept., field workers as well as for cattle and poultry farmers on heatwave plan in Animal Husbandry sector
- Display posters / distribute pamphlets at veterinary hospitals, and important government offices
- Ensure availability of adequate field staff during heatwave and ensure that they visit villages for follow up action.

TSRTC:

- Display posters & distribute pamphlets on prevention of heat related illness
- Ensure availability of shade, drinking water, ORS for passengers & crew at Bus stands, Depots.
- Establish Health stations at major bus stands / Terminals and other public places
- Ensure that buses do not run during peak hours (12-4 pm) when Heatwave is declared.
- Provide emergency ice packs and heat-illness prevention materials to TSRTC staff (Drivers, Conductors) etc.

EDUCATION DEPARTMENTS:

- Display posters & distribute pamphlets on prevention of heat related illness in Schools and Colleges.
- Identify shelter space, drinking water, ORS facilities with signs.

- Ensure that Schools do not function during peak hours (12-4 pm) when Heatwave is declared.
- No open air classes to be conducted.

COMMUNITY GROUPS/SHG'S AND INDIVIDUALS:

- Keep cool and hydrated by drinking the water, staying out of the sun, and wearing light clothing during the heat season.
- Check on vulnerable neighbors, particularly during a **heat alert**.
- Limit heavy work in direct sun or indoors if poorly ventilated, especially during a **heat alert**.

Phase 3: Post-Heat Season (Annually in July through September)

- The GHMC Nodal Officer will organize an annual Heat wave Action Plan evaluation meeting with all zonal and circle level officers of GHMC, HOD's of all Line Departments/ Organizations / NGOs involved in rehabilitation /Agencies and relevant stakeholders.
- Evaluate the Plan process based on performance and revise accordingly.
- Evaluate the reach and impact of the Plan and revise accordingly.
- Evaluate reach of advertising to targeted groups and other means of communication such as social media.
- Evaluate the outreach of water supply to the high risk and most vulnerable areas.
- Review and revise the plan to establish Cooling centers and Chalivendras at vulnerable places and crowdy places such as Slums, bus stops, labour addas, construction sites, shopping malls, etc.
- Construct drinking water points at identified most vulnerable points.

- All zonal and circle level officers of GHMC, HOD's of all Line Departments/ Organizations shall evaluate and submit the reports
- Incorporate data and findings into future versions of the Heat Action Plan.
- Measure mortality and morbidity rates based on data before and after the Plan's interventions.
- Build on the "Green Cover" activity to establish tree-plantation campaign in hotspot areas such as roadsides and during plantation festival in June. Incorporate student volunteers or incentivize builders to plant trees to help effect this effort.
- Post the revised Plan in the GHMC website ahead of the 2019 heat season for stakeholders.

DEALING WITH HEAT RELATED ILLNESS

Identification of Heat-Wave illness and recordings of casualties:

In the past, when the Government declared ex-gratia compensation for heat-wave affected families, it was observed that some people who were aware of the provision of direct cash relief reported natural deaths as the heat wave deaths. In the event of false reporting, the following procedures can be used for verifying and ascertaining the real cause of death.

A. Recorded maximum temperature on the particular time periods and place.

B. Recording incidents, panchnama or others witnesses, evidence or verbal – autopsy.

C. Postmortem/medical checkup report with causes.

D. Local authority or Local body enquiry/verification report.

Acclimatization:

People at risk are those who have come from a cooler climate to a hot climate. When such visitors arrive during the heat wave season, they should be advised not to move out in open for a period of one week till the body is acclimatized to heat and should drink plenty of

water. Acclimatization is achieved by gradual exposure to the hot environment during heat wave.

Symptoms and First Aid for various Heat Disorders

HEAT DISORDER	SYMPTOMS	FIRST AID
Sunburn	Skin redness and pain, possible swelling, blisters, fever, headaches.	Take a shower, using soap, to remove oils that may block pores preventing the body from cooling naturally. If blisters occur, apply dry, sterile dressings and get medical attention.
Heat Cramps	Painful spasms usually in leg and abdominal muscles or extremities. Heavy sweating.	Move to cool or shaded place. Apply firm pressure on cramping muscles or gentle massage to relieve spasm. Give sips of water. If nausea occurs, discontinue.
Heat Exhaustion	Heavy sweating, weakness, skin cold, pale, headache and clammy. Weak pulse. Normal temperature possible. Fainting, vomiting.	Get victim to lie down in a cool place. Loosen clothing. Apply cool, wet cloth. Fan or move victim to air-conditioned place. Give sips of water slowly and If nausea occurs, discontinue. If vomiting occurs, seek immediate medical attention. Or call 108 and 102 for Ambulance
Heat Stroke (Sun Stroke)	High body temperature (106+F). Hot, dry skin. Rapid, strong pulse. Possible unconsciousness. Victim will likely not sweat.	Heat stroke is a severe medical emergency. Call 108 and 102 for Ambulance for emergency medical services or take the victim to a hospital immediately. Delay can be fatal. Move victim to a cooler environment. Try a cool bath or sponging to reduce body temperature. Use extreme caution. Remove clothing. Use fans and/or air conditioners. DO NOT GIVE FLUIDS.

Do's:

- Try to stay in cold places.
- Use umbrella during hot days.
- Wear thin, loose cotton garments, preferably of white colour.
- Wear a hat of cotton or a turban.
- Avoid outdoor physical activity from 12-3 P.M. If unavoidable, attend to only light physical activity under the hot sun.
- Take ample water along with salted butter milk or glucose water.
- Take measures to reduce the room temperature like watering, using window shades, fanning, and cross ventilation.
- Shift the person with heat stroke symptoms to cool dwelling.
- The person suffering with heat stroke should have minimum clothing.
- The person suffering with heat stroke has to be sponged with cold water, indirect application of ice-packs.
- The person suffering with heat stroke should be kept in between iceblocks.
- If the person affected with heat stroke is not showing any improvement, he should be shifted to a hospital immediately preferably with cooling facility.

DON'Ts

- Expose to direct sunlight or hot breeze.
- Move under hot sun without umbrella.
- Use of black and synthetic, thick clothes during summer season.
- Move under the hot sun without a hat or turban.
- Attend to strenuous physical activity under the hot sun.

- Allow direct hot air into the living room.
- Delay in shifting the person suffering with heat stroke to a cool place.
- The person suffering with heat stroke to have thick clothing.
- The person suffering with heat stroke to be sponged with hot water and to be exposed to hot air.
- The person suffering with heat stroke to be sponged with hot water and to be exposed to hot air.

TERRORISM, BOMB BLAST, RAPID GUN FIRING, NAXALISM AND MAOISM

INTRODUCTION:

Terrorism is, in the broadest sense, the use of intentionally indiscriminate violence as a means to create terror among masses of people; or fear to achieve a financial, political, religious or ideological aim.It is used in this regard primarily to refer to violence against peacetime targets or in war against non-combatants.The terms "terrorist" and "terrorism" originated during the French Revolution of the late 18th century[3] but gained mainstream popularity during the U.S. Presidency of Ronald Reagan (1981–89) after the 1983 Beirut barracks bombings[4] and again after the attacks on New York City and Washington, D.C. in September 2001and on Bali in October 2002

Bomb blast: A bomb is any of a range of explosive weapons that only rely on the exothermic reaction of an explosive material to provide an extremely sudden and violent release of energy (an explosive device). Detonations inflict damage principally through ground- and atmosphere-transmitted mechanical stress, the impact and penetration of pressure-driven projectiles, pressure damage, and explosion-generated effects. A nuclear weapon employs chemical-based explosives to initiate a much larger nuclear-based explosion.

Most bombs or as we call them IEDs (Improvised Explosive Devises) are hand made and are limited in their design only by the imagination of, and resources available to, the bomber

Bomb Blast can be define as follows:

1) An explosive weapon detonated by impact, proximity to an object, a timing mechanism, or other means.
2) An explosive device fused to explode under specific conditions
3) The explosion of a bomb
4) A bomb is a device which explodes and damages or destroys a large area.

TYPE OF BOMB BLASTS:

1) A-bomb: An A-bomb is an atomic bomb
2) Atomic Bomb: An atomic bomb or an atom bomb is a bomb that causes an explosion by a sudden release of energy that results from splitting atoms
3) Car bomb: A car bomb is a bomb which is inside a car, van, or truck.
4) Cluster bomb: A cluster bomb is a type of bomb which is dropped from an aircraft. It contains a large number of smaller bombs that spread out before they hit the ground
5) Dirty bomb: A dirty bomb is a nuclear bomb that uses explosives to release radioactive material over a wide area.
6) Dive-bomb: If a plane dive-bombs an area, it suddenly flies down low over it to drop bombs onto it.
7) H-bomb: An H-bomb is a bomb in which energy is released from hydrogen atoms.
8) Hydrogen bomb: A hydrogen bomb is a nuclear bomb in which energy is released from hydrogen atoms.

9) Letter bomb: A letter bomb is a small bomb which is disguised as a letter or parcel and sent to someone through the post. It is designed to explode when it is opened.

10) Logic bomb: A logic bomb is an unauthorized program that is inserted into a computer system so that when it is started it affects the operation of the computer.

11) Nail bomb: A nail bomb is a bomb which contains nails that are intended to cause a lot of damage and injury when the bomb goes off.

12) Neutron bomb: A neutron bomb is a nuclear weapon that is designed to kill people and animals without a large explosion and without destroying buildings or causing serious radioactive pollution.

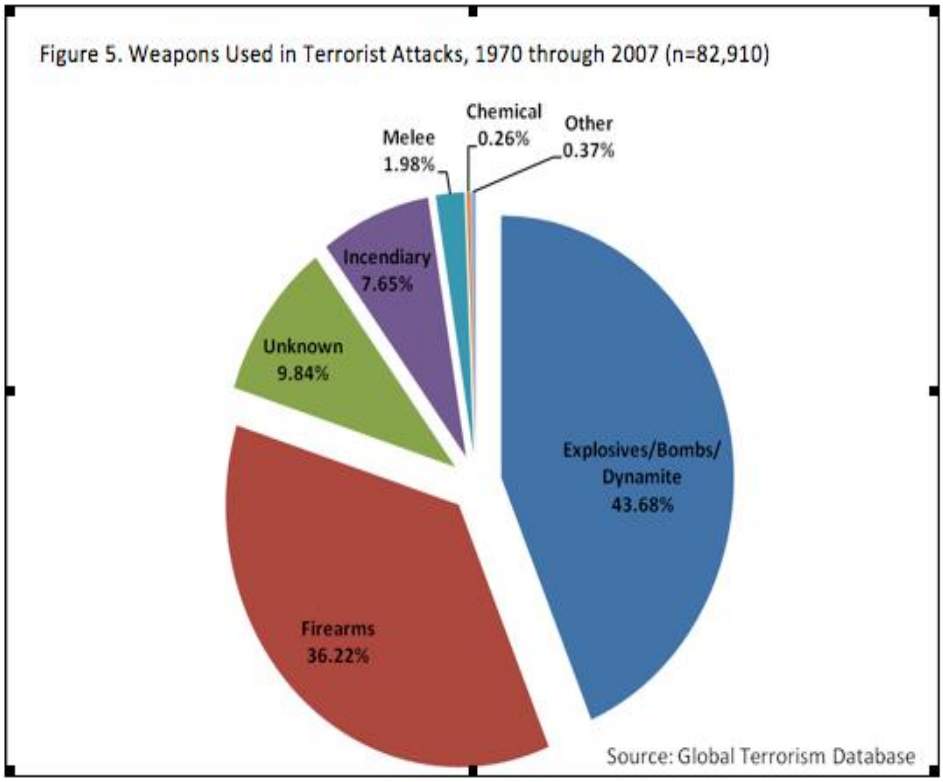
13) Parcel bomb: A parcel bomb is a small bomb which is sent in a parcel through the post and which is designed to explode when the parcel is opened.

14) Petrol bomb: A petrol bomb is a simple bomb consisting of a bottle full of petrol with a cloth in it that is lit just before the bottle is thrown.

15) Pipe bomb: A pipe bomb is a small bomb in a narrow tube made by someone such as a terrorist.

16) Smoke bomb: A smoke bomb is a bomb that produces clouds of smoke when it explodes

17) Time bomb: A time bomb is a bomb with a mechanism that causes it to explode at a particular time.



Why Hyderabad is vulnerable to Bomb Blast:

1) Hyderabad is the capital city of the Indian state of telangana. It is the most populous city in India, and one of the most populous cities in the world.

2) Hyderabad is the commercial and entertainment centre of India, it is also one of the world's top 10 centers of commerce in terms of global financial flow, generating 5% of India's GDP, and accounting for 25% of industrial output,

3) Hyderabad is home to some of India's premier, important financial institutions scientific institutes, religious places, railway stations, bus stops.,

4) Most of India's major television and satellite networks, as well as its major publishing houses, are headquartered in hyderabad . The city also houses telugu film and television industry. Hyderabad’s business opportunities, as well as its potential to offer a higher standard of living, attract migrants from all over India and, in turn, make the city a melting pot of many communities and cultures.

5) Hyderabad also has a large unskilled and semi-skilled self-employed population, who primarily earn their livelihood as hawkers, taxi drivers, mechanics and other such blue collar professions.

6) Public transport systems in HYDERABAD include the HMR, TSRTC buses, black-and yellow meter taxis, auto rickshaws and ferries. MMTS and TSRTC together accounted for about 88% of the passenger traffic.

7) Secunderabad is the headquarters of two of south central Indian Railway zone. hyderabad is also well connected to most parts of India by the Indian railways.

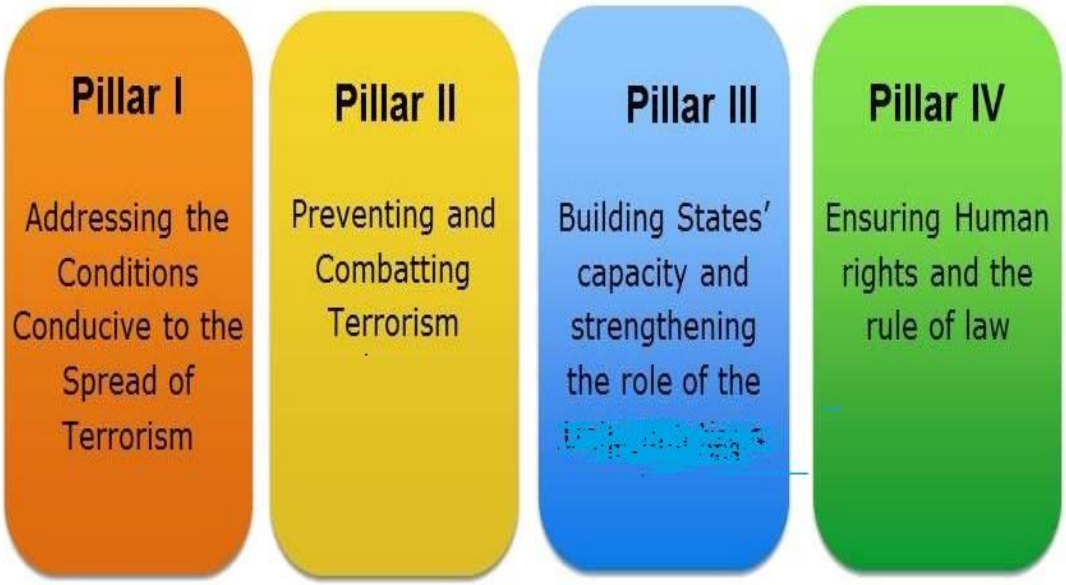
8) The rajiv Gandhi International Airport is the main aviation hub in the city and the busiest airport in India in terms of passenger traffic.

9) Under nizam rule, tanks were the only source of water in hyderabad. Many localities have been named after them. The singoor and gandipet lakes supplies potable water to the city

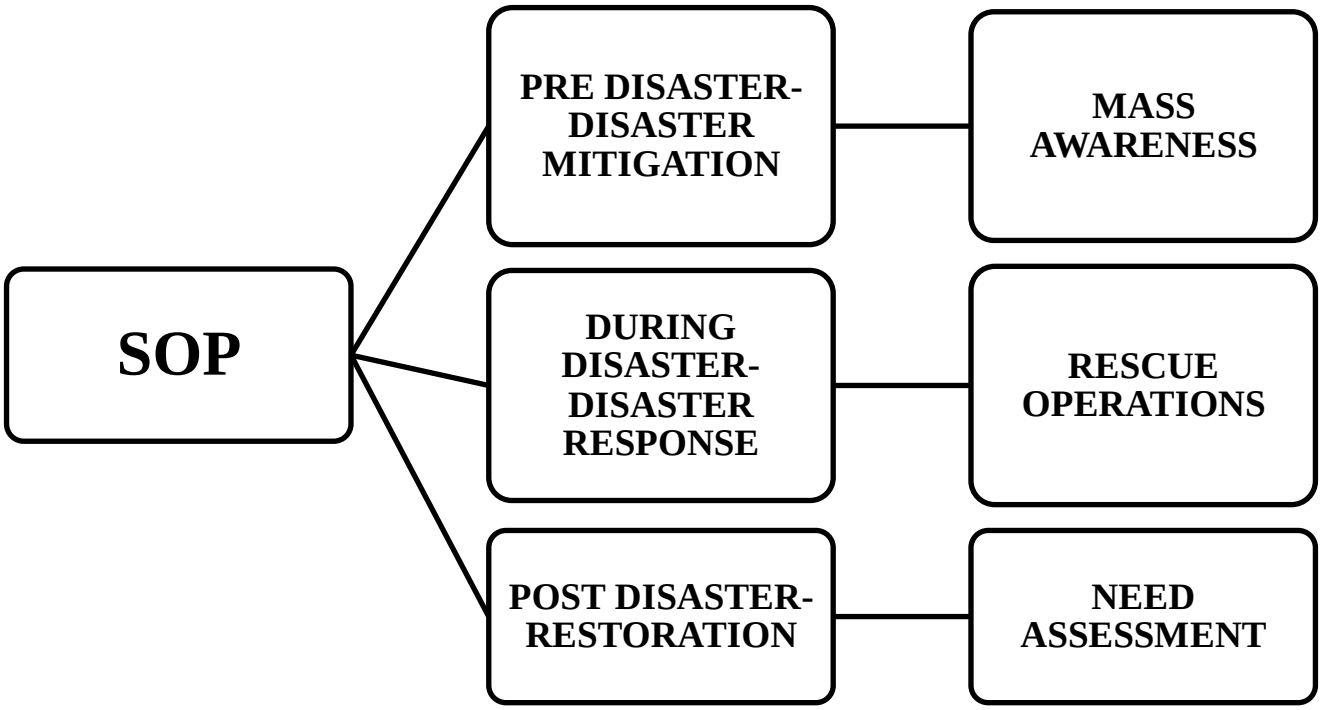
10) Hyderabad's culture is a blend of traditional festivals, food, music and theatres. The city offers a cosmopolitan and diverse lifestyle with a variety of food, entertainment and night life, available in a form and abundance comparable to that in other world capitals. hyderabad's history as a major trading centre has led to a diverse range of cultures, religions and cuisines coexisting in the city. This unique blend of cultures is due to the migration of people from all over India since the British period.

11) Hyderabad has numerous newspaper publications, television and radio stations.

- **STEPS INVOLVED TO COMBAT THE TERRORISM, BOMB BLAST ETC.,**



STAGES IN STANDARD OPERATING PROCEDURE



PRE DISASTER -

QRTs & DRFs (GHMC):

1) To form the Incident Management Team
2) To form the Damage Assessment Team
3) To organize orientation and training of responders including community in disaster management
4) To follow-up with concerned agencies about the arrangements for putting up stop gap bridges on emergency basis & formation and training of the team for the erection of temporary bridges.
5) Prepare a plan to utilize resources of personnel, equipment, and supplies in the most effective manner.
6) Repair and maintain rescue Equipment
7) Conduct Training and Refresher Courses for Search & Rescue Teams.

8) Keep fire stations and Regional Command Centers fully equipped with manpower and machinery for Search & Rescue.

9) Keep communication devices in a state of readiness.

10) Recue disaster prone areas along with other agencies.

11) Conduct mock drills, awareness programs etc.

12) Undertake any other activity required

POLICE DEPARTMENT:

1) shall form task force to curb the terror financing.

2) Shall issue warning announcements and LED display boards at traffic junctions to the public to be vigilant in suspicious objects

3) shall use modern communication systems like mobile apps, FM Radio, whatsapp, facebook to create awareness in mass public.

HEALTH & SANITATION DEPARTMENT (GHMC):

1) Arrange training programmes for Doctors, Paramedical Staff to handle mass casualty.

2) Conduct coordination meetings with private & public sector hospitals, dispensaries, medical institutions, blood banks, ambulance services etc.

3) Assess need for additional clinical services and staff.

4) Coordinate with state medical department to Stock the emergency drugs, surgical equipment, potable water, food packets, insecticides etc. and Reserve beds in hospital.

DURING DISASTER:

CHIEF OF OPERATIONS (DIRECTOR, DM,GHMC):

The Chief of Operations is responsible for the functioning of Hyderabad city disaster management organization. The position provides leadership, coordination, and management of all emergency operations being implemented by the City, in both the field and in the City's control room.

The position also serves as the City's authorized policy maker and official spokesperson regarding the disaster situation and the City's disaster management actions.

This position is also responsible for ensuring coordination of all City emergency operations with those of line departments in city, District Collectorate, adjacent jurisdictions and higher levels of government.

The Chief of Operations provides direct oversight and coordination of all City operations conducted at the City Control Rooms, including final approval of each Disaster Action Plan(DAP) and instructing the City's Disaster Management Organization on the DAP implementation.

The position would also be responsible for allocating the contingency fund for emergency operations based on the contingency plan of the GHMC. Fund requirement can also be decided based on the magnitude of the disaster.

DISASTER MANAGEMENT, GHMC:

1) To set up an Emergency Operations Center.
2) Monitoring and dissemination of information.
3) Establish fully equipped Rescue teams with unskilled and skilled/trained officers.
4) Establish Quick Response Teams and Disaster Response Teams.
5) To conduct Training programmes and mock drills/exercises to all skilled and unskilled labour, officers who are assigned to deal with any kind of disasters.
6) Procurement of Men, Machinery, vehicles , etc., required for QRT and DRT.

7) Identifying the feasible and effective locations for stationing the QRT and DRT

QRTs & DRFs (GHMC):

1) To coordinate the disaster response operation
2) Activate Emergency Support Functions as per requirement
3) If required dispatch NDRF to the incident site
4) Inform the military and paramilitary forces to get ready for emergency response
5) To alert higher authorities
6) Activate HAM Radio Operators
7) To organize the restoration of communication, transportation
8) Coordinate for relief distribution
9) To hold meeting with donor agencies
10) To follow-up with Health and sanitation Department, GHMC about facilities available, both in private & public sector, for health services in emergencies in vulnerable areas and act accordingly
11) To follow-up with TSSPDCL about arrangements for the restoration of power supply and providing for supply of power through alternative sources of energy & act accordingly
12) To organize disposal of dead bodies both human and livestock

NDRF:

1) The Lead Agency representative will establish operations at the EOC as soon as possible after the notification of the disaster and implement existing SOPs.

2) Operationalize level of activation depending on the nature and severity of the incident

3) Determine needs and available resources.

4) Locate incident command post and staging areas appropriately

5) Direct operations from a safe distance, with capability of escape.

6) Augment men and machinery if necessary

7) Establish communications from the incident site with other tactical operations, and EOC

8) Monitor activities and update support agency staff.

9) Transport injured persons to hospitals.

10) Shift victims to temporary shelters as per requirement.

CIVIL POLICE DEPARTMENT:

1) Ensure law and order situation in affected area

2) Provide extra police personnel at traffic diversions

3) Protect life and property, control traffic and keep close watch on anti-social elements

4) Provide information about traffic flow to the public through media, public address system, sign boards and display boards

5) Transport / Shift stranded or affected persons through Police and other vehicles

6) Organise towing of stranded vehicles if any with the help of volunteers

7) Maintain a log of reports / action taken, needs and capabilities

8) Undertake any other activity as per site condition

TRANSPORT DEPARTMENT (GHMC):

1) Determine transportation needs and available resources.
2) Establish and maintain public transportation and resources.
3) Disseminate updated information to passengers through Public Address System.
4) Organize transportation of sick or injured persons in need of medical attention.
5) Maintain a log of actions taken, reports, and transportation resources needed along with the capacity and capabilities.

HEALTH & SANITATION DEPARTMENT (GHMC):

1) Deploy emergency medical teams where people cannot be shifted from the site.
2) Provide medicines, water and food in temporary shelters.
3) Liaise with secondary & tertiary medical institutions for care of critically wounded.
4) Liaise with local blood banks and ambulance services.
5) Arrange dead body disposal, victim identification, mass fatality management and decontaminating the remains.
6) Safety and security of medicines and medical devices.
7) Establish temporary morgue facilities & coordinate with police for early disposal of dead.

REVENUE DEPARTMENT:

1) Revenue Department should coordinate with the concerned departments for relief measures at the time of bomb blast,terror attack.

2) The list of safety buffer stocks of essential commodities like Rice, granes, etc., should be prepared and procured accordingly to organise the relief camps/rehabilitation cetres.
3) Post disaster Need/Impact/Damage assessment should be done.
4) In coordination with GHMC, extend financial support to organize the relief camps and to release exgracia to the damaged properties and population.

URBAN COMMUNITY DEVELOPMENT DEPARTMENT(GHMC):

1) Coordinate with Self help groups, NGO's, etc in assisting the rescue operations
2) In Coordination with Revenue Department identify and operationalize the rehabilitation centers to provide shelter to the evacuated population.
3) Deploy personnel for damage assessment

POST DISASTER

QRTs & DRFs (GHMC):

1) To get the resettlement plan prepared
2) To deactivate the response operation but continue with relief and other support service operations.
3) Maintain records containing all relevant information relating to action points and contact points
4) Conduct debriefing meetings with all agencies
5) Prepare an After Action Report to identify lessons learnt and improvements needed
6) To follow-up with Armed Forces about the emergency support services available with them and keep in regular touch with them.

CIVIL POLICE DEPARTMENT:

1) Help Relief agencies to evacuate stranded, trapped citizens into temporary shelters.

2) Maintain records containing all relevant information relating to action points and contact points

3) Prepare an After Action Report to identify lessons learnt and improvements needed

DOS & DONTS

Dos

1) Always keep an eye for suspicious objects.
2) Recognize an improvised explosive device (IED). Never handle an unclaimed object.
3) Notice your surroundings for anything out of place.
4) Evacuate all the people immediately to a safe distance
5) Open all windows and doors.
6) Remove all valuable and unstable articles like fuel and electronic items.
7) Place sand bags around the suspected object. The height of sand bags should be three times the height of the suspected object.
8) Inform the Bomb Disposal Squad.
9) Inform the Fire Brigade, hospitals and ambulance service.
10) Do handle the package alone if you are duty bound to handle it.

DON'TS

1) Do not spread rumours.
2) Do not touch, disturb and approach the suspected object.
3) Do not try to submerge the suspicious object in water.
4) Do not try to open or puncture the suspicious object.

5) Do not try to be a dead hero.