

7.0 ADDITIONAL STUDIES

General

This chapter covers Risk Assessment (RA) Studies for the construction and operation phase for building construction projects, the safety precautions that have to be taken during construction phase and the Disaster Management Plan (DMP) and Emergency Preparedness Plan (EPP) Onsite and Offsite.

1.1 Risk and Disaster Management Plan

In consultation with the international consultants, a structure of the Disaster Management Plan was developed. The Disaster Management Plan (DMP) has three components: (a) Risk Analysis & Vulnerability Assessment, (b) Response Plan, and (c) Mitigation Strategy. At the state and district levels, the same structure has been followed.

The Risk Analysis and Vulnerability Assessment depict the present picture for each disaster-exposure, loss of life, property damage, etc. It also shows geographic distribution of each hazard. The various monitoring facilities, regulatory regimes, countermeasures available for each disaster, etc. have been presented in this analysis.

The response plan presents an organizational structure of all the state, central and non-governmental agencies to effectively deal with the disaster in a co-ordinated and quickest possible manner to mitigate the impact of disaster during and after it is set. It identifies functional areas such as relief, communications, information, transport, health services, etc., and proposes assignments to various departments, including identifying lead and supporting departments. The response plan also lays down preparedness checklists, standards of services, operating procedure guide lines, and reporting formats.

The mitigation strategy and plan focus on the long-term planning for disaster reduction. It deals with the issues of continued commitment to hazard identification and risk assessment, applied research and technology transfer, investment-incentives for mitigation, and leadership and co-ordination for mitigation. The mitigation strategy makes an argument for better land use management, building codes, traffic standards, health standards, etc. These objectives are to be secured through disaster legislation, mitigation regulation, and incentives for mitigation.

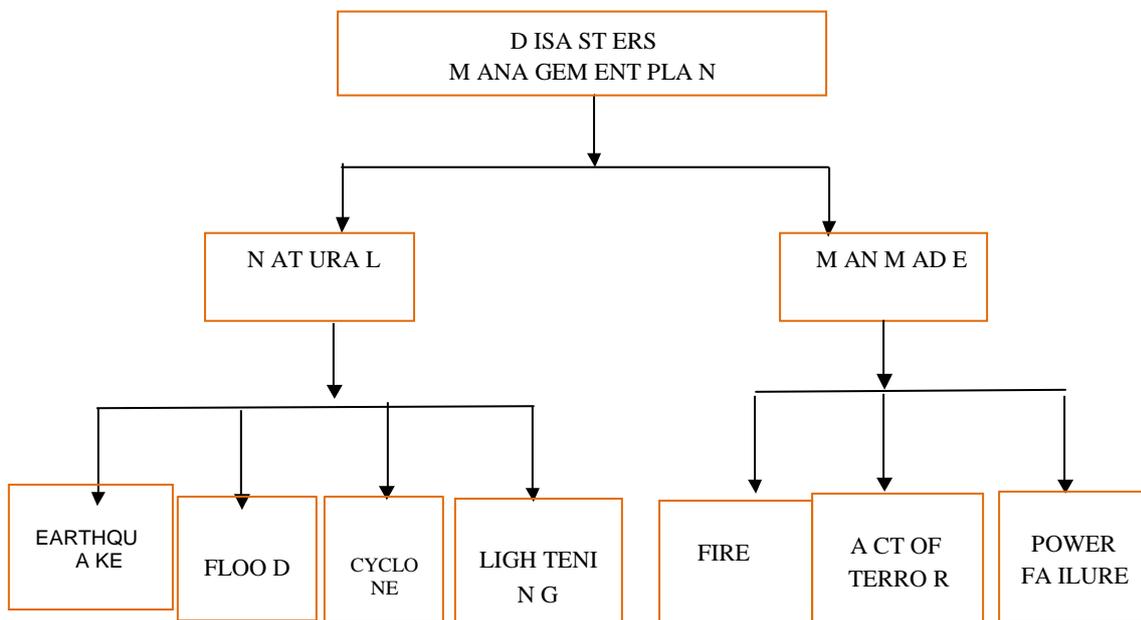


Figure 1.1: Structure of DMP.

Natural Disaster

A. Earthquake:

As per the Seismic Zoning Map of India, Pune region falls under Seismic Zone-III. The structural design shall be certified as per IS code 1893, IS 456, IS 875, IS 4326 Plain & reinforced concrete – code of practice IS 1893 – 2002, criteria for earthquake resistant design of structures.

B. Floods:

Areas having adequate drainage characteristic do not get flooded by accumulation of water from heavy rainfall. Following precautions would be taken to manage flood disasters:

- Storm water system would be checked and cleaned periodically.
- Mapping the areas within or leading in or out of the building that will be water logged, flooded or isolated due to the flood. The areas will be marked after completion of the project (as final ground levels etc. will be available after completion).
- Dewatering pumps will be installed at vulnerable locations.

C. Cyclones

Cyclones are caused by atmospheric disturbances around a low pressure area distinguished by swift and often destructive air circulation. They are usually accompanied by violent storms and bad weather. There is no history of any cyclone in this area. However in such an instance the occupants advised to stay in the shelter tightly secured windows and doors. The glass of windows etc. should be covered with card Boards to avoid breaking of glass with the objects flying outside.

D. Lighting:

Lightning is an atmospheric electrostatic discharge accompanied by thunder which typically occurs during thunderstorms and sometimes during volcanic eruptions or dust storms. It often leads to physical damage to the building and occupants. It can also lead to short circuits, failure of power supply and fire.

Lightning arrestor systems shall be provided for high-rise buildings in this project to abate the impact of lightning hazard.

Man Made Disaster

A. Fire

Fire could take place through various means; one of them is through electrical fire. Hence, all the electrical works and material of the building would adhere to the standards. Regular maintenance and audit of the electrical systems would be carried out by external auditors.

Fire alarm would be installed. The functioning of these fire alarms would be checked periodically by security manager. A report of the same would be submitted to safety manager. The occupants/residents of the proposed buildings would undergo mock fire drills. These mock drills would be conducted by qualified staff (e.g. Fire brigade). Fire extinguishers would be placed in every floor. All occupants/residents would be given training on how to use these fire extinguishers. Fire extinguisher equipment would be evaluated periodically to ensure that it is in working conditions by security manager. If any faulty equipment is observed then it would be repaired or replaced by Society. Proper evacuation plan would be checked for the building. The map for the evacuation plan would be provided to all the occupants.

B. Act of Terror

After completion of this project even if each building shall have its own security services, precautions should also be taken at individual level

C. Power Failure

Buildings have emergency and standby power systems to provide safety and comfort to building occupants during interruptions in their normal power supply.

Risk Management

The scope of work includes site inspection, risk identification, selection of potential loss scenarios, in order to take strategic decision to mitigate/minimize the level of risk to the facility and to the community. The Infosys has adopted following measures for risk management during construction and operation stage.

During Construction Stage

Supply of safe potable water to the workers during construction is ensured to avoid the potential health risks due to consumption of contaminated water.

Medical Staff, First aid kit with adequate sterilized dressing materials and appliances is made available at site. Vehicular arrangements to shift the injured person to the hospital shall always be made available.

Workers shall be provided with all safety gadgets like protective footwear, helmets, goggles, earplugs and gloves and shall be made them to wear the same during their working at site.

It is ensured that no paint containing lead or lead products is used.

Safe scaffolding, ladders, working platforms, gangways, stairwells, excavations and safe means to entry and exit shall be provided as per the applicable regulation.

Adequate precaution to prevent electrical accidents shall be taken.

No material shall be stacked or placed to cause danger or inconvenience to any person or the public. Necessary fencing and lights shall be provided.

Employing a safety Engineer/Environmental Engineer.

During Operation Stage

Fire detection system and firefighting system as per IS: 2189 are proposed.

Automatic fire detection system with different types of heat and smoke detectors shall be provided in different areas of each floor. The system shall be connected to the fire alarm system. The control room/security room with communication system to all floors and facility for receiving messages from different floors shall be provided at entrance on ground floor.

Adequate fire protection arrangements such as fire pump, wet riser system, hose reel, hose box, fire alarm system, portable fire extinguisher and emergency lights are proposed.

Non-combustible materials shall only be used for the construction/erection of false ceiling including all fixtures and used for its suspension/erection etc. and shall be of low flame rating.

Stand by electric generator shall be installed to supply power to staircase and corridor lighting circuit, ventilation and smoke extraction system, lifts, exit signs and fire pump in case of failure of normal electric supply. DG area shall be made restricted entry.

Installation of transformers, LT & HT panels shall be as per the provisions specified by the concerned authorities.

The whole project area falls under Zone-III of seismic map. The seismic factors have been appropriately incorporated in the civil design.

1.2 Emergency Preparedness Plan

On-site emergency plan: This shall be prepared in detail and circulated to all concerned members of emergency teams. The objectives of emergency planning are to maximize the resource utilization and

combined operations to localize the emergency and if possible eliminate it to maximize the effects of accidents on people and property, to take remedial measures in the quickest possible time to contain the incident and control it with minimum damage, to mobilize the internal resources and utilize them in the most effective way, to get help from the local community and government officials to supplement internal manpower and resources.

Emergency Action Plans

1. Fire Fighting

No attempts shall be made to extinguish the burning gas but the container under fire and other containers in vicinity shall be kept cool by water spray.

If the gas leakage does not ignite, the container shall be approached from up and removed to the place of safety away from the source of ignition.

Firefighting services will be used.

Underground water storage tank of campus;

Wet riser for buildings;

Fire pumped and booster pump, sprinkler pump and jockey pump,

Manual and automatic fire alarm system for each building,

Potable fire extinguishers,

Clear pathway for fire finder movement around building,

Refuge area as per the fire department NOC.

2. For Electric Fire

Disconnect the affected areas from power supply.

Attempt shall be done to extinguish fire with the help of CO₂, DCP.

If fire is not extinguished, extinguish by spraying water with fog nozzle after ensuring complete isolation of electric circuit will be done.

3. For Earthquake

When first tremors are sensed during earthquake, all inmates shall evacuate building and assemble at safe place away from structures, walls and falling objects.

Inform the higher local police authority.

Inform controller of explosives.

Request the local fire brigade to position at least one fire tender at the location immediately.

Keep the concerned department at regional level informed with developments at regular intervals.

Alert the local government/private hospitals and seek their help.

Emergency services should be contacted for assistance.