

Risk Assessment and Disaster Management Plan

Proposed Lighthouse at Village Kuthankuli,

District Tirunelveli, Tamil Nadu

Project Proponent

Directorate of Lighthouse and Lightships, Chennai



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RISK ASSESSMENT AND DISASTER MANAGEMENT PLAN

The overall objective of the Disaster Management Plan is to make use of the combined resources at the site and outside services to achieve the following:

- Localize the emergency, initially contain and ultimately bring the disaster under control
- Minimize effects on property and people
- Effective rescue and medical treatment
- Inform and collaborate with local/state emergency relief authorities
- Evacuation
- Preserve relevant records and equipment for subsequent enquiry into the causes and circumstances leading to the disaster
- Restoration
- Investigate and take steps to prevent recurrence of similar incidents

The DMP therefore needs to be related to the identification of sources from which hazards can arise and the maximum loss scenario that can take place in the concerned area. The project proponent should adhere to all the laws regulating the construction of the proposed lighthouse. With the improved communications and better data collection probable disaster scenarios such as cyclones and tsunamis are forecasted well in advance before they strike though foretelling of some such as earthquakes, still remain elusive. Impact of disaster can be significantly reduced through attempts at preparedness, mitigation, and post-event rehabilitation work. Based on hazard identification in the proposed project, an on-site emergency plan has to be prepared.

Maintaining and Practicing DMP

DGLL should, establish, implement, maintain, and update the DMP. Copies of the approved DMP should be filed in the reception of the Lighthouse, at the security desk, and in the vicinity of the Emergency Command Centre or in an identifiable location. The plan should be readily available to the lighthouse staff and emergency responders at all times.

Preliminary Hazard Analysis

Preliminary hazard analysis has been carried out to identify major hazards associated with the functioning of the proposed project and are detailed in table below.

Preliminary Hazard Analysis

Hazard Component	Potential Risk	Vulnerability/Probability
D.G. Sets	Mechanical hazards and fire hazards	Low: The DG sets are used only in case of power failures. The lubrication oil and diesel are stored in small quantities.
Natural Disasters	Earthquake and cyclones may damage the electrical system, structure and water/sewerage system. It may also damage the external envelope of structures.	Low: Kuthankuli falls in Seismic Zone II which is one of the least vulnerable zones. Kuthankuli does not have history of severe earthquakes.
Topography and Drainage	Flooding/Water logging	Low: The risk may arise only in the rare event of choking of natural and manmade storm water drainage system coupled with high tide and storm surge.
Biological Disaster	Disease outbreak, Epidemics causing deaths.	Low: The population density is low at Kuthankuli Village. Hence the chances for sudden outbreak and spreading of epidemics are less.
Others	Power failure, Water shortage, traffic congestion, communication failure, etc.	Low: Power failure will not affect the project seriously as stand by DG sets are provided for all essential services.

Preparedness Operations

Preparedness operations are pre-emergency activities undertaken with the goal of enhancing capability of responders thus, enabling the safety of residents/visitors and staff. Preparedness activities fall into a continuous cycle of planning, education, training, exercising, evaluating, and corrective action.

- **Response Operations**

Response operations will be managed using a functional-based approach. Through a hazard analysis, several functions needed to respond effectively to emergencies are identified. Upon activation of EMP and the ERP, the Incident Response Team Members will manage on-scene activities through plans and procedures for that particular operation. Below is a list of response operations to be undertaken during an emergency depending on its severity.

- ✓ Direction, Control, and Coordination
- ✓ Communications Infrastructure
- ✓ Continuity of Operations
- ✓ Transportation
- ✓ Emergency Public Information
- ✓ Evacuation
- ✓ Health and Medical
- ✓ Resource Management
- ✓ Damage Assessment
- ✓ Shelter-in-Place
- ✓ Energy
- ✓ Public Safety and Security
- ✓ Warning and Notification
- ✓ Information Sharing and Intelligence
- ✓ Lockdown

- ✓ Reunification and Family Assistance
- ✓ Critical Incident Stress Management
- Recovery Operations

Recovery operations focus on restoring the emergency affected area to a resilient and sustainable state. The DMP focuses only on short-term recovery operations that flow from response activities. Short-term recovery activities will set the stage for a successful long-term recovery.

- Mitigation Operations

Mitigation is the process of reducing or eliminating the potential impacts or consequences of an identified threat. Proper mitigation operations identify and target individuals and property most at risk during an emergency and takes actions to limit their exposure.

Emergency Evacuation Plan (EEP)

Emergency evacuation plans are developed to ensure the safest and most efficient evacuation time of all expected residents of a structure.

The evacuation plan must include,

- Emergency routes
- Procedures for employees who must remain to operate critical equipment before evacuating
- Procedures for accounting for occupants after evacuation
- A description of the emergency voice/alarm communication system alert tone and preprogrammed voice messages
- Site Plans indicating

Life Safety Systems proposed for the project site (Onsite Disaster Preparedness)

The following life safety systems are effectively incorporated in the building design and layout for successful implementation of the DMP.

- ✓ Smoke & Heat Detection Systems

- ✓ Fire Alarm Pull Stations
- ✓ Tamper and Flow Switches
- ✓ Fire Doors and Exit Doors
- ✓ Portable Fire Extinguishers
- ✓ Automatic Sprinklers and Fire Pumps
- ✓ Emergency Lighting will be based on independent circuits backed by DG sets.
- ✓ Electrical meter room will be sealed with non-combustible materials.
- ✓ Measures to ensure occupational health and safety of all labours and staff during the construction and operation phases

The staff should be aware of all the life safety equipment in the lighthouse and the maintenance personnel should know how the systems operate. All employees should be notified of all emergency drills and should be updated on all changes in the life safety systems.

Procedures to be followed during the most common Emergencies

Fire

Occurrence of fire requires fuel, heat and oxidizer. Fire disasters are most common of the emergencies which can occur at a Lighthouse site. Sometimes they occur in circumstances that are unexpected or unpredictable. Fire incidences can be natural or human generated

List of Major Fire Hazards:

- Flammable chemicals: Paints, Aerosols, Fuels, etc.
- Flammable substances: Furniture, Upholstery, Dry Grass, etc.
- Processes involving open flame: Cooking, Smoking, etc.
- Heat producing devices: Dryers, Heaters, Hot Plates, etc.
- Electrical equipment: Short circuits and malfunctioning equipment

Procedure to be followed in response to a Fire Hazard

- When an alarm sounds on the floor or area, begin immediate evacuation following the EEP
- Check for damage to utilities and appliances.

- Check for fire and if possible extinguish the fire or inform the in charge/DMC
- A small fire at the point of leakage will be extinguished by enveloping it with a water spray or a suitable smothering agent such as CO₂ or DCP
- Go to the pre-determined Evacuation Assembly Point

Flooding

- If water has been present anywhere near electrical circuits and electrical equipment, turn off the power at the main breaker or fuse on the service panel. Never enter flooded areas or touch electrical equipment if the ground is wet
- Stay well clear of any downed or damaged power lines. Establish a safe distance from the lines and report the incident to the DMC.

Earth quake or tremors

- Take cover under a sturdy object
- If outdoors, try to move into an open area away from power lines.

Medical Emergency

- Render first-aid or CPR only if you have been trained
- Do not move the victim unless there is danger of further injury
- Do not leave the injured person
- Comfort the victim until emergency medical services arrive
- Have someone stand outside the building to flag down the ambulance and/or Safety and Security when they reach the vicinity

Electrical Accidents

- Immediately contact DMC/TNEB and Fire Force explain the type of emergency, the location, condition to help and disconnect the power.
- Keep everyone away from the equipment, its load, or from fallen wires.
- Rescue can only be attempted by a person trained to use special live-line tools. Never touch the equipment or the victim until the area is declared safe by a qualified person.

Precautionary Measures to meet the emergencies

The following basic precautions are recommended:

- BIS codes relevant to the project site shall be adopted for the Lighthouse construction.
- Good house-keeping and prompt repair of faulty electrical appliances.
- High voltage points and instruments to be secured and labeled prominently.
- Switches and fuses to conform to correct rating of circuit.
- Welding /Cutting jobs to be carried out under strict supervision.
- Fire Rescue drills to be carried out at regular intervals.
- Elementary firefighting training to occupants and staff.
- The Lighthouse shall be fully secured all around the periphery.
- The entry and exit points shall be manned for 24 hours with specially trained security staff fully equipped with latest security gadgets including closed circuit electronic surveillance cameras/CCTVs monitoring all sensitive areas within the Lighthouse premises.
- Periodical checking of all lighthouse building for structural faults, and to carry out timely repairs shall be carried out.
- Provision will be made to harvest most of the rain water from the proposed site. This will reduce the water shortage as well as runoff water on the site.
- Maintaining data base of agencies responsible for handling emergencies like Hospitals, Trauma care, State Disaster Management Agency, Police, Ambulance etc.