7.1. Risk Assessment

7.1.1. Introduction

Risk Assessment policies are essential tools to prevent and mitigate undue harm to people during the development process. When identifying and designing a project, Risk Assessment help assess the potential social risks and impacts (Positive and Negative) associated with a development intervention.

7.1.2. Health and Safety

The site will be managed by the concern contractor who will be responsible and accountable for all activities on site. He will delegate authority for the day to day running as deemed appropriate, but liaise with those with delegated authority on a daily basis to discuss and close out health and safety issues that have been identified.

Staff is responsible for their own safety, for their actions that may affect the safety of those they are working with or persons who may be working nearby. In this respect they have the obligation to report unsafe actions and situations to the client/ Site Manager. It is everyone's duty to prevent unsafe situations and actions. The health and safety of all those who work at the Plant shall be ensured, as far as is reasonably practicable by:

Assessing the risk of all work activities, recording the significant findings and developing method statements as appropriate

- Providing and maintaining safe plant and systems of work, together with appropriate personal protective equipment
- Minimising risks associated with hazardous substances including waste to be processed, materials used and the by-products of waste treatment processes
- Minimising risks associated with other occupational health risks including noise, vibration and manual handling
- Maintaining the plant in safe condition including as regards workplace transport and fire risks
- Providing appropriate information, instruction, training and supervision to those working at the Plant or visiting the Plant, including information and training with regard to the emergency procedures.

- Implementing effective systems for active and reactive monitoring of compliance, including by inspections, audits and incident/ near miss investigation
- Ensure the safety end absence of risk to health in connection with the use, handling, storage and transport of articles and substances.
- Make regular risk assessment available to employees
- Take appropriate preventive/protective measures staff has to follow plant's in-house rules and regulations as described further in this HSE plan. In addition the following rules & regulations if any, are also imposed to each staff:
- The client's worksite safety rules and regulations
- The general safety rules imposed by Indies government legislation

If hazard arises, or suspected to be present, they shall be reported immediately and, if necessary, all work stopped and persons withdrawn from the area.

Safety during Construction

Safety during construction is maintained through the site management organisation put into place. Before opening a construction site, concern contractor prepares a set of documents ruling the entire construction process. Part of this document is called safety file which contains local safety regulations to be observed and project safety instruction.

Safety during operation

Plant safety as regards normal and disturbed operation is being developed during the conceptual and details design phases of the plant e.g. fire protection concept, emergency evacuation concept, safety interlocks of control system etc. for each piece of equipment the relevant safety standards are observed. The operating and maintenance manual handed over to the customer before commissioning contains all information for a safe operation and maintenance of the plant. A special section "safety" provides hints and warnings as to potential hazards or risks arising during normal operation, start-up, shut- down and maintenance. The training program of future staff will also focus on safety aspects.

Handling and Management of municipal solid waste:

ISWM Facility

- Safety regulations should be followed
- ISWM Facility shall be fenced or hedged and provided with proper gate to monitor incoming vehicles or other modes of transportation.
- The ISWM Facility shall be well protected to prevent entry of unauthorized persons and stray animals. Further, ISWM Facility should be clear of unnecessary obstruction so as to avoid danger to these persons,
- Approach and other internal roads for free movement of vehicles and other machinery shall exist at the ISWM Facility.
- Utilities such as drinking water, bathing facilities, toilets for workers and lighting arrangements for operations at ISWM Facility when carried out in night hours shall be provided.
- Regular health inspections of workers at ISWM Facility shall be periodically made
- Safety of all persons entitled to be on the Site, by ensuring the use of protective gears amongst sanitary workers, vehicle drivers, guard, gateman, while working and handling waste at ISWM Facility should be looked out. Hand gloves, high boots made of tough leather, goggles and masks to all workers for handling municipal solid waste should be provided.

Engagement of Staff and Labour

Arrangements for the engagement of all staff and labour, local or otherwise, and for their payment and extending other facility in compliance to the Applicable Law should be done. Encouragement, to the extent practicable and reasonable, to employ staff and labour with appropriate qualifications and experience from places not limited to but near to geography should be there.

Rates of Wages and Conditions of Labour

- Appropriate amount should be paid according to the rates of wages and conditions which are not lower than the minimum wage as notified by GoH should be observed time to time

• Personnel should be informed about their liability to pay personal income taxes in respect of such of their salaries, wages, allowances, and any benefits as are subject to taxes under the Laws of the Country for the time being in force.

Labour Laws

Compliance with all the relevant labour Laws applicable to the Contractor's Personnel,

including Laws relating to their employment, health, safety, welfare, immigration and emigration, should be done and their legal rights must be allowed.

• Employees should obey all applicable Laws, including those concerning safety at work and shall do needful

• Following and implementation of all statutory provisions on labour (including not employing or using children as labour and equal pay for equal work), health, safety, welfare, sanitation and working conditions. The employment should be on the basis of equal opportunity and fair treatment, and shall not be on discrimination with respect to aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment or retirement, and discipline. Equal wages and benefits should be given to men and women for the work of equal value or type.

Working Hours

The workers shall not be made to work outside the normal working hours stated in the employment terms & condition (appointment letter), unless:

- Otherwise stated;
- The PMU gives consent, or
- The work is unavoidable, or necessary for the protection of life or property or for the safety of the Works, in that case the PMU should be immediately informed and further permissions to taken by them

Facilities for Staff and Labour

- Welfare facilities for the Personnel should be provided but permission for any of the temporary or permanent living quarters within the ISWM Facility should not be given by the authority.
- Medical and Accidental Facilities
- Precautions to maintain the health and safety of the employed personnel should be taken and medical staff facility should be provided at site.
- Safety office should be appointed at site that will be responsible for maintaining safety and protection against accidents. This person shall be qualified for this responsibility, and shall have the authority to issue instructions and take protective measures to prevent accidents. Throughout the contract period, whatever is required by this person to exercise this responsibility and authority should be provided.
- Details of any accident should be sent to PMU as soon as practicable after its occurrence. Records and reports should be maintained concerning health, safety and welfare of persons, and damage to property, as PMU may reasonably require.
- If malaria or other insect-borne diseases be prevalent in the ISWM Facility, the staff and labour should be provided the suitable prophylactics, equip living accommodation with screens and bed-nets, and carry out spraying with approved insecticides, as appropriate and to the PMU's satisfaction.
- JBMEMPL shall be responsible for the safety of the on duty labour employed by him and shall be liable for payment of necessary compensation in the case of accidents as per Workers Compensation Act.
- JBMEMPL shall provide and maintain upon the Works and the Site sufficient, proper and efficient life-saving appliances and first-aid equipment to the approval of the IE and in accordance with the requirements. HIV-AIDS Prevention
- HIV-AIDS awareness program should be conducted via an approved service provider
- Information, Education and Consultation Communication (IEC) campaigns should be conducted, at least every alternative month, concerning the risks,

dangers and impact, and appropriate avoidance behaviour with respect to Sexually Transmitted Diseases (STD)— or Sexually Transmitted Infections (STI) in general and HIV/AIDS in particular

- Provide male or female condoms for all Site staff and labour as appropriate
- Provide for STI and HIV/AIDS screening, diagnosis, counselling and referral to a dedicated national STI and HIV/AIDS program to all Site staff and labour.

Moving/ rotating parts of machines

Hazards caused by moving or rotating parts of machines are covered with providing an electrical/ pneumatic lockout procedure.

Supply of Drinking Water and Sanitation

Adequate supply of drinking water should be provided for the use of Contractor's staff and work people, together with sanitary facilities (portable toilets or latrines), to the satisfaction of the IE.

Measures against Insect and Pest Nuisance

The necessary precautions should be taken to protect the Personnel employed on the Site from insect and pest nuisance, and to reduce their danger to health.

Alcoholic Liquor or Drugs

The JBMEMPL shall not, otherwise than in accordance with the Laws of the Country, import, sell, give barter or otherwise dispose of any alcoholic liquor or drugs, or permit or allow importation, sale, gift barter or disposal thereto by Contractor's Personnel.

Festivals and Religious Customs

Country's recognized festivals, days of rest and religious or other customs should be respected.

Prohibition of Harmful Child Labour

Employment should not be done of any child to perform work that is economically exploitative, or is likely to be hazardous to, or to interfere with, the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development. "Child" means a child below the

statutory minimum age specified under applicable National, provincial or local law.

Permits/ authorization

Permits will be issued at the work site when required for the works. Prior to start the operations, it is necessary to be informed about the work permits that are applicable for the site. When permits to work are in force, they are always required before commencement of work, in written and properly authorized.

Plant's personnel should carefully read, understand, sign and explicitly comply with all conditions required by the permit. The permit holder must be on the work spot for the duration of the works being carried out under the permit, if he is to leave the work spot whilst work is on-going, he must transfer the permit through the correct permit transfer system

In commissioning or testing of equipment, the person responsible for the equipment must be present so that all necessary checks are made prior to the commencement of work.

Table 7.2: List of permits required for work on site/plant

Type of Permit	When Required
Work Permit	A general permit for all activities
T&C Permit	For testing and commissioning
Hot Work	For works involving naked plame, source of ignition of sparks
Confined space	For work carrying out inside a confined space such as underground manholes, tanks, inlet channel, area where possible of asphyxiated from lack of oxygen, the risk of fire/ explosion and the presence of dangerous airborne substances
Work at height	For work activities carried out at a workplace exceeding the height of 2m
Excavation	For any excavating (including drilling) in earth, roads, parking lots, slabs, and slab floo
Lifting & Hoidting	For any lifting and hoisting activities involving lifting machines or lifting appliances
Radiation Permit	For radiation works

Working on height

Not all work at height can be reasonably removed by the design process. Therefore, the hierarchy of managing and selecting work equipment for work at

height shall be followed as set out by the Work at Height Regulations. Working at height will be covered as part of the risk assessment for all work where there is a risk a person could be injured by falling.

Hot work

Some systems or equipment have a hot surface and consequently a thermal hazard. Where reasonably practicable insulation of the system or equipment is provided in design. Other thermal hazards occur in e.g. bag filter, ID fan, boiler feed water pumps, steam circuit, fire fighting pump station. General arrangements for controlling are in most cases implementation of the Lockout/ isolation procedure combined with providing personal protection means.

- No hot works are allowed to be carried out in the following areas:
- Fully closed storage tanks, vessels or drum of any nature
- Pipes and vessels under internal pressures whether of steam, feed water, air or gases
- Pipes, tanks and spaces which have contained fuel and other flammable substances Nakes flames, hot works or element that produces sparks (including electric devices) must not be near vicinity of fuel storage areas, oil paint and bottled gas stores and locations where activities such as painting works are in progress.

Chemical hazards

All chemicals must be accompanied by a Material Safety Data Sheet (MSDS) to enable the user to prepare for the arrival, storage and use of the specific substance and to ensure that all safety and environmental implications can be taken into account before the work is started. Plant's personnel should carefully read the MSDS and should handle all chemicals in accordance with the instructions as stated. It should not be mistaken by appearance of chemicals (e.g. some chemicals look like water). Legal requirements and instructions for labelling, handling and care of waste must be followed. The removal of used products, which are contaminated after a spill, shall be carried out in line with the site waste procedure.

Employment Records of Workers

Complete and accurate records of the employment of labour at the site should be maintained. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and shall be available for inspection by the Engineer during normal working hours.

Disposal of excavated earth/rock during construction

- During the site clearance and disposal of debris, the public or private properties should not be damaged /affected and the also traffic is not interrupted.
- The dispose of debris is only to the identified places or with prior permission of the Independent Engineer.
- Disposal of the debris for the improvements for public utilities after the proper consent of villagers/community and approval of the Engineer.
- In the event of any spoil or debris from the sites being deposited on any adjacent land, immediate removal of all such spoils debris should be done and the affected area should be restored to its original state to the satisfaction of the Engineer.
- Effective water sprays during the delivery and handling of materials to be done when dust is likely to be created and to dampen stored materials during dry and windy weather.
- Materials having the potential to produce dust will not be loaded to a level higher than the side and tail boards and will be covered with a tarpaulin in good condition.
- During earth removal and disposal of debris proper warning signs will be installed to the satisfaction of the PMU.
- Any diversion required for traffic during disposal of debris shall be provided with traffic control officer.
- During the debris disposal, surrounding features should be taken care and any damage should be avoided
- The disposal of debris will not impact any endangered/rare flora and fauna.

- The horticultural and construction or demolition or debris shall be separately collected and disposed of in accordance with the Bye laws and not to be mixed with municipal solid waste.

Sanitation and housekeeping at the labour/Construction camps

For labours from outside Sonepat or migrant labours, engaged by JBMEMPL for construction of ISWM Facility, temporary camping arrangements shall be made including basic daily facilities ensuring the social safety, security and health condition of labour including women and children (if any). The number of temporary camps/tents and related facilities would depends upon the number of labours engaged during construction period.

Site Selection

- The construction labour camps shall be located at least 200-500m away from habitations at identified sites. The living accommodation and ancillary facilities for labour will be erected and maintained to standards and scales approved by the engineer.
- The camps must be located such that the drainage from and through the camps will not endanger any domestic or public water supply.
- All sites must be graded, ditched and rendered free from depressions such that water may get stagnant and become a nuisance.

Water Supply

- An adequate and convenient water supply, approved by the appropriate health authority, must be provided in each camp for drinking, cooking, bathing and laundry purposes.
- At all construction camps and other workplace, good and sufficient water supply will be maintained to eliminate chances of waterborne/water-related/water-based diseases to ensure the health and hygiene of the workers.

Toilet Facilities and Hygiene

- Adequate supply of water, close to latrines and urinals.

- Within the precincts of every workplace, latrines and urinals will be provided in an accessible place, and the accommodation, separately for each of these, as per standards set by the Building and other Construction Workers (regulation of Employment and Conditions of Service) Act, 1996. Except in workplaces provided with water-flushed latrines connected with dry earth system (receptacles) which will be cleaned daily during working hours and kept in a strict sanitary condition.
- Toilet facilities adequate for the capacity of the camp must be provided. Each toilet room must be located so as to be accessible, without any individual passing through any sleeping room.
- Where the toilet rooms are shared, such as in multifamily shelters and in barracks type. facilities; separated toilet room must be provided for each gender. These be distinctly marked “for men” and “for women” or marked with easily understood pictures or symbols.

Disposal arrangements for the waste generated at construction camp

Waste bins must be provided in the camps and regularly emptied and the waste disposed off in a hygienic manner to the satisfaction of relevant norms.

Unless otherwise arranged for by the local sanitary authority, arrangement for disposal of excreta by incineration at the workplace will be made by means of as suitable incinerator approved by the local medical health or municipal authorities.

Alternatively, excreta may be disposed off by putting a layer of night soils at the bottom of permanent tank prepared for the purpose and covering it with 15 cam layer of waste or refuse and then covering it with a layer of earth for a fortnight (by then it will turn into manure).

On completion of the works, all such temporary structures will be cleared away, all rubbish burnt, excreta tank and other disposal pits or trenches filled in and effectively sealed off and the outline site left clean and tidy, at the Contractor’s expense, to the entire satisfaction of the IE.

Electrical

- Only authorised persons are allowed to carry out work to the site/ plant's electrical installation. Unauthorized personnel should not be permitted to enter any switch room.
- No equipment or extension cord should be used if the grounding prong has been removed. No two-wire extension cords are permitted.
- All electrically powered hand tools shall be inspected before use.

After work or in the case of power failure, all portable electrical tools should be switched off. Any equipment that is locked or tagged out into the switch receptacle should not be activated. Conductor should not be handled with bare hands, but with rubber gloves or insulated appliances designed for the voltage applied. Rubber boots should also be provided against the risk of electrical shocks, if necessary. All electrical appliances and conductors have to be clearly marked to indicate their purpose and voltage.

The nominal voltage of the extra low voltage supply is 24V AC 50 Hz single phase. This voltage is safe in conditions where simultaneously accessible parts (such as exposed electric cable) may be touched by a person whose skin is dry or moist, but not wet. It should not be used in locations where a person is immersed in water or working in the rain or working in a confined conductive location such as inside tanks or boiler furnace, etc.

7.1.3. Community participation program

Community participation can be defined as the involvement of people in a community in projects to solve the problems. An efficient waste management program, regardless of the strategy, requires significant cooperation from waste generators and activity community participation. Community participation can take place during any of the following phases.

- Need assessment
- Planning
- Mobilizing
- Training
- Implementing

- Monitoring and evaluation
- Community participation is important to:
- Achieve the principles of reducing, reusing, and recycling waste.
- Discouraging littering of waste on streets and into drains, open spaces, water bodies. Promotes storage of waste at source, segregated as biodegradable and nonbio- degradable (so that hazardous waste and infected waste are kept separate).
- Achieve increased level of awareness about the efficient methods of waste management among the public

7.2. DISASTER MANAGEMENT PLAN

Disaster is a major emergency in plant, which has the potential to cause serious injury or loss of life. It may be due to malfunction of the normal operating procedure or an intervention of outside force such as a cyclone, earthquake and flood. Disaster management has assumed significant role with an aim of taking precautionary step to control the hazard propagation and avert disaster and also to take such actions after the disaster, which limits the damage to the minimum.

Types of Disaster at the power plant

Disaster may occur due to following hazards at power plants.

- Fire
- Explosion
- Oil spillage
- Acid Spillage
- Electrocution
- Hazardous waste

In any power plant there are various activities or area which pose substantial threat to the workers and hence hazardous in nature. The potential hazardous areas and the likely accidents with the concerned area have been enlisted below.

Table 7.3: Hazardous area with concerned accident

S.No.	Hazardous Area	Likely Accident
1.	Boiler Area	

2.	Oil Tanks	Fir and Spillage
3.	Turbine Room	Explosion
4.	Electrical Rooms	Fire and Electrocution
5.	Transformer Area	Fire and Electrocution
6.	Cable Tunnel	Fire and Electrocution
7.	Storage Facilities	Fir/Spillage

Accident Level

If there is any disaster in any part of plant/work place due to any reason, the classification of areas which may be affected and nature of accidents can be made as follows:

Table 7.4: Accident Levels

S.No.	Accident Levels	
1.	Level I	Operator level
2.	Level II	Local community level
3.	Level III	Regional/national level
4.	Level IV	International level

Out of the above, only level-I and level-II class of accidents can be considered applicable to the plant as they occur at operator, local community level.

Level-I Accidents

Under this level, disaster may happen due to electrocution, fire, explosion, oil spillage and spontaneous ignition of combustible material. This level has probability of occurrence affecting persons inside the plant. Various hazardous areas which have been mentioned above in Table 7.2 as potential hazard areas will be affected during this level of accidents.

Level-II Accidents

Disaster of this level can occur in case of sabotage and complete failure of all automatic control/warning systems, and also if the fuel oil stored in tank and covered by tank bunds leaks out. However, probability of occurrence of this is very low due to adequate security, training and education of persons of plant responsible for operating such systems.

Disaster preventive measure

In order to prevent disaster due to fire, explosion, oil spillage, electrocution and other accidents following preventive measures shall be adopted.

- Design, manufacture and construction of all plant and machineries building will be as per national and international codes as applicable in specific cases and laid down by statutory authorities.
- Provision of adequate access way for movement of equipment and personnel shall be kept.
- Minimum two no. of gates for escape during disaster shall be provided.
- System of fire hydrants comprising electrical motor division and diesel engine drivers fire pumps with electrical motor driver jokey pump for keeping the fire hydrant system properly pressurized and automatic water sprinkling system for all important transformers.
- Fire hydrants with fire hoses in all areas where fire can break.

Site emergency control room

In order to control the disaster more effectively, a Site Emergency Control Room (SECR) will be established at the plant site. The facilities proposed to be provided are given in following sections:

- Plant Layout
- Plant Layout with inventories and locations of fuel oil/furnace oil storage tanks, etc.
- Hazard identification chart, maximum number of people working, assembly points etc.
- Population around factory
- Internal telephone connections
- External telephone connections
- Hotline connection to district collector, police control room, fire brigade, hospital etc.
- Public address system
- Torch-lights
- List of dispensaries and registered medical practitioners around factory

- Area map of surrounding village
- Nominal roll of employees
- Notepad and ball pen to record message received and instructions to be passed
- The blown-up copy of Layout plan showing areas where accident has occurred.

Safety Department

Safety department will be manned by experienced engineers and other supporting staff who shall bring safety consciousness amongst the workforce of plant. The safety department will conduct regular safety awareness courses by organizing seminars and training of personnel among the various working levels.

Contingency plan for management of emergency

The emergency organisation will be headed by emergency leader called Site Main Controller (SMC) who will be plant manager. In his absence, senior most people available at plant shall be emergency leader till arrival of plant manager.

Besides the top officials described above, rest of the employees will be divided into three action teams namely A, B, C, and a Non-action Group D. Action team 'A' will consist of staff of section in which accident has occurred. Action team 'B', will consist of staff of non-affected sections and maintenance department. Action team 'C' will consist of supporting staff i.e. Security supervisor, Ware house Supervisor, Shift Supervisor etc. Group 'D' will consist of people not included in those teams like contractor, labour, security men etc.

Team 'A' comprising staff of affected section will be taking up the action in case of an emergency. Team 'B' will help team 'A' by remaining in their respective sections ready to comply with specific instructions of SMC. Team 'C' consisting of supporting staff will help team 'A' as required and directed by Team 'B'. Group 'D' will be evacuated to safe region under supervision of Team 'C'. A multi-channel communication network shall connect SECR to control rooms of plant, various shops, and other departments of plant, fire station and neighbouring industrial units.

Outside organizations involved in control of disaster

In the event of massive spillage of toxic chemicals, fuel oil or occurrence of fire, population inside and outside plant boundaries, vegetation and animal etc. may be

affected. State and Local authorities: may also take place. In such an event, help will be taken from outside agencies also.

- The organizations that will be involved District Collector, Revenue Divisional Officer etc
- Factory Inspectorate, Chief Inspector of factories, Joint Chief Inspector of factories, Inspector of factories.
- Environmental agencies: Member Secretary of State Pollution Control Boards, District Environmental Engineer
- Fire Department: District Fire Officer
- Police Department: District Superintendent of Police, SHOS of nearby Police Stations

Public Health Department:

- District Medical Officer –
- Residential medical officers of PHCs in a radius of 3 km around plant site

Local Community Resources

- Regional Transport Officer
- Divisional Engineer Telephones

The outside organisations will directly interact with district magistrate who in consultation with SMC will direct to interact with plant authorities to control the emergencies.

Hazard emergency control procedure

The onset of emergency will in all probability, commence with a major fire or explosion the following activities will immediately take place to interpret and take control of emergency.

- Staff member on duty will go to nearest fire alarm call point and trigger off the fire alarm.
- On site fire crew led by fire man will arrive at the site of incident with fire foam tenders and necessary equipment.
- Site Main Controller will arrive at SECR, from where he will receive information continuously from incident controller and give decisions and direction to the

incident controller, plant control room, and emergency security controllers and to the site medical officer to take care of casualties.

Site Main Controller (SMC) will be directing and deciding a wide range of following desperate issues.

In particular SMC has to decide and direct:

- Whether incident controller requires reinforcement of manpower and facilities
- Whether plant is to be shut down or more importantly kept running.
- Whether staff in different locations is to remain indoors or to be evacuated and assembled at designated collection center.
- Whether missing staff members are to be searched or rescued.
- Whether off-site emergency plan to be activated and a message to that effect is to be sent to district headquarter.

When the incident has eventually been brought under control as declared by the Incident Controller, the SMC shall send two members of his advisory team as inspectors to incident site for:

- An assessment of total damage and prevailing conditions with particular attention to possibility of re-escalation of emergency which might, for the time being, be under control.
- Inspection of other parts of site which might have been affected by impact of incident.
- Inspection of personnel collection and roll call centers to check if all persons on duty have been accounted for.
- Inspection of all control rooms of plant to assess and record the status of respective plants and any residual action deemed necessary.

Post emergency, the inspectors will return to SECR with their observations and report of finding and will submit the same to SMC.

Miscellaneous preventive measures

Alarm System to be followed during Disaster

On receiving the message of disaster from Site Main Controller, fire station control room attendant will sound Siren I, wailing type, for 5 minutes. Incident controller will arrange to broadcast disaster message through public address system.

On receiving the message of "Emergency Over" from Incident Controller the fire station control room attendant will give All "Clear Signal" by sounding alarm straight for two minutes. The features of alarm system will be explained to one and all to avoid panic or misunderstanding during disaster.

- Actions to be taken on hearing the warning signal
- On receiving the disaster message, following actions will be taken:
- All the members of advisory committee, personnel manager, security controller, etc. will reach the SECR.
- The process unit persons will remain ready in their respective units for crash shutdown on the instruction from SECR.
- The persons from other sections will report to their respective officer.
- Resident of township will remain alert.

Safety Devices/Equipment

In order to make the services more effective, the workers and rescue team will be provided with the safety equipment and items like gas mask respirators, fire entry suits, fire blankets, rubber shoes or industrial shoes, rubber glove, ladders, ropes, petromax lamp torches, etc.

Fire Extinguisher

The different type of fire extinguishers have been proposed at strategic locations in the plant and given below table:

Table 7.5: Different Fire Extinguisher at different sites

Name of Site	Type of Fire Extinguisher
Generator area	CO2 Type, Foam Type, Dry Chemical Powder
Cable galleries	O2 & Foam type, Dry chemical powder
High voltage panel	O2 & Foam type, Dry chemical powder
Control rooms	O2 & Foam type, Dry chemical powder
MCC rooms	O2 & Foam type, Dry chemical powder

Pump Houses	O2 & Foam type, Dry chemical powder
Fuel tank area	CO2, Foam type, Dry chemical powder sand basket
Guest houses and offices	Dry chemical powder, foam typ
Godown	Foam type
Crusher house	CO2, Dry chemical powder, foam type

Fire Protection and Safety Measures

In order to prevent disaster due to fire, explosion, oil spillage, electrocution and other accidents, following preventive measures will be adopted:

- Design, manufacture and construction of all plant and machineries building will be as per national and international codes as applicable in specific cases and laid down by statutory authorities
- Provision of adequate access way for movement of equipment and personnel shall be kept.
- Minimum two no. of gates for escape during disaster shall be provided.
- System of fire hydrants comprising electrical motor division and diesel engine driver's fire pumps with electrical motor driver jokey pump for keeping the fire hydrant system properly pressurized and automatic water sprinkling system for all important transformers.
- Fire hydrants with fire hoses in all areas where fire can break.