PROJECT REPORT FOR CRZ CLEARANCE

OF

Proposed redevelopment of dilapidated Structure

At

CTS. No. 118/C, of Village Dahisar (west) Taluka Borivali Mumbai.

PROPOSED BY

Mr. Arun P Upadhyay

PROJECT SUMMARY

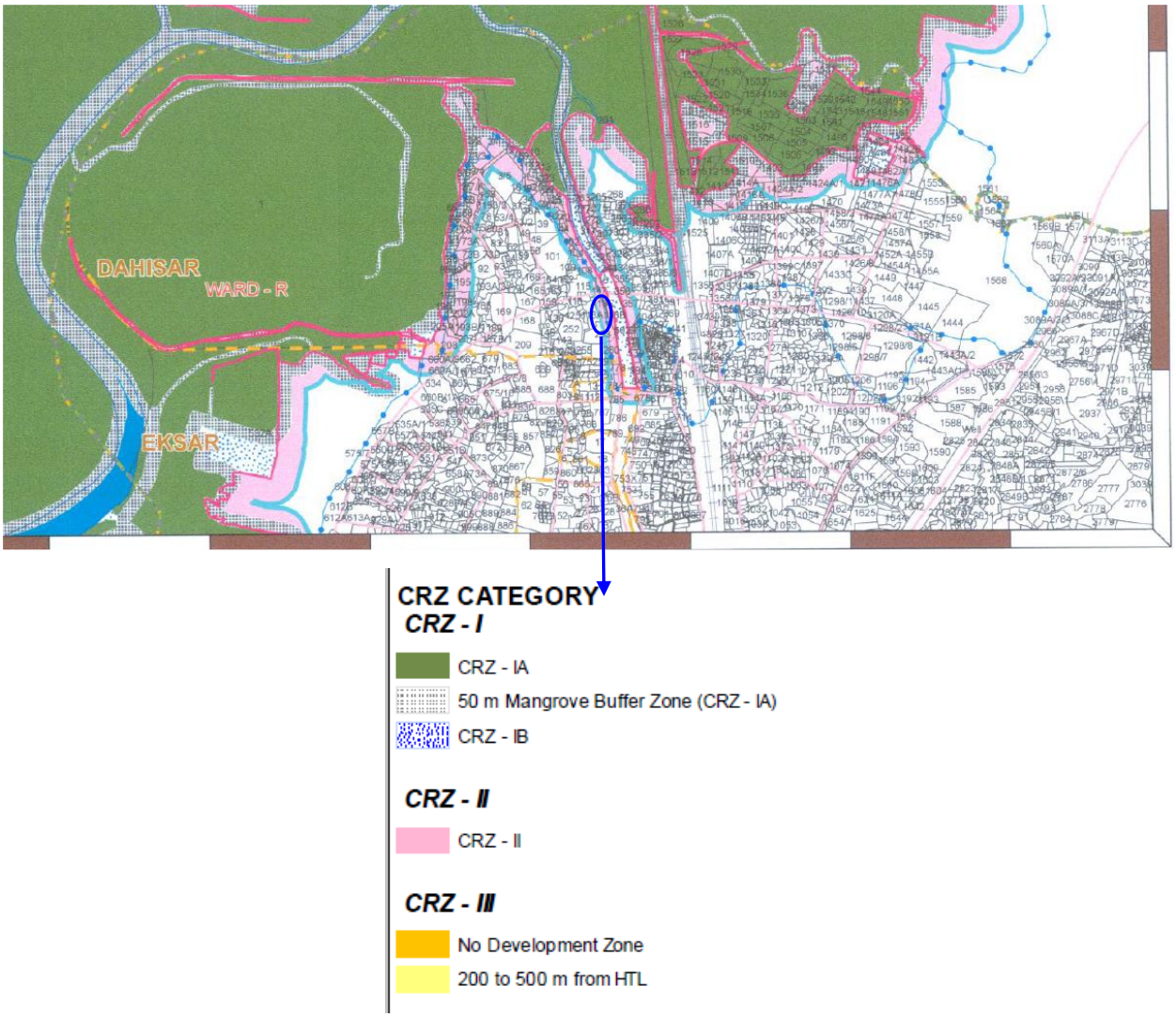
PARTICULARS	DETAILS
Proposed Project	"Proposed Redevelopment of dilapidated Structure
Location Of Site	CTS no. 118/C of village dahisar (west) taluka Borivali Mumbai
Total Plot Area	2110.30 Sq.m
Proposed FSI Area	2934.38 sq. m
Construction Area	5263.58 sq. m
Total Project cost	10.0 crores
Number Of Population	330
Total Water Requirement	45 KLD
Sewage Generation	36 KLD
Sewage Treatment	Sewage will be connected to STP of capacity 40 KLD
Solid Waste Generation	Dry waste: 66 kg/day & wet waste: 99 kg/day
Parking Provided	82 nos.

PROJECT DESCRIPTION

The proposed project is situated at plot BEARING C.T.S. NO. 118/C, at village Dahisar (West) Taluka Borivali Mumbai. The proposed project is reconstruction of existing building.

Sr.no	Particulars	Area in (sq.m)
1	Proposed Plot Area	2110.30 sq.m
2	Permissible FSI	5275.75 sq.m
3	Proposed BUA	2934.38 sq. m
4	Total Construction area	5263.58 sq. m
5	No of Building	1
6	Configuration of proposed Buildings	Gr + 21st Floor

ABOUT PROJECT PROPONENT: Mr. Arun P Upadhyay owner of plot proposed the reconstruction of dilapidated building on plot bearing CTS no. 118/C, at village Dahisar (West) Taluka Borivali, Mumbai.



Coastal Zone Management plan

According to the CZMP prepared by the Institute of remote sensing the proposed project site falls in the CRZ II. The project site lies in the residential zone as per the development plan & remarks from Municipal Corporation of Greater Mumbai. (Development plan is attached as an annexure II)

ENVIRONMENTAL SETTING OF THE PROPOSED PROJECT

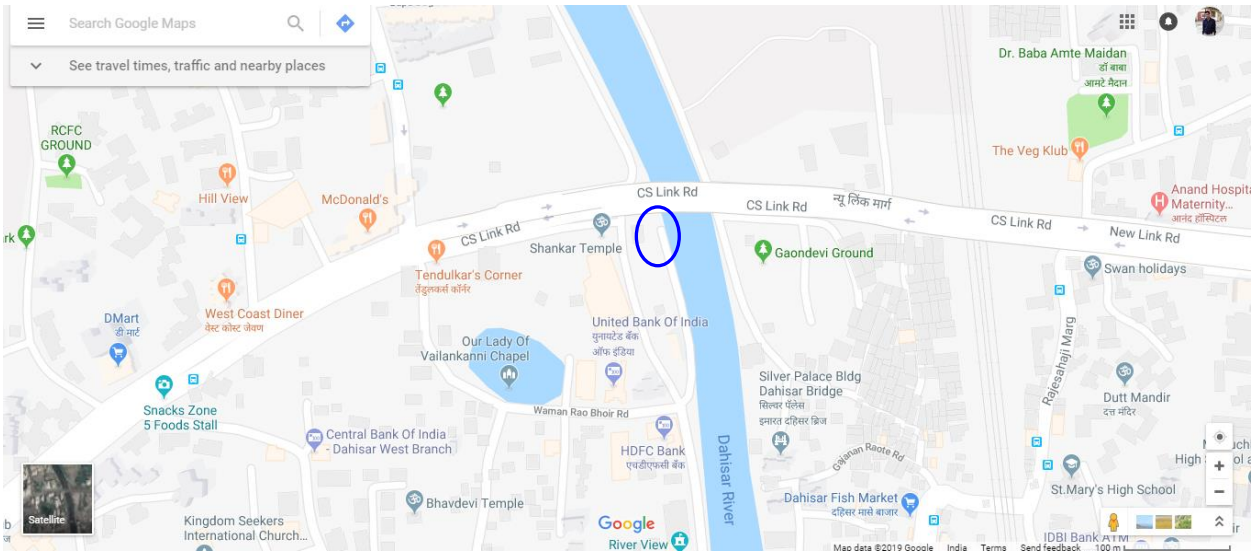
LATITUDE	19°15'28.14"N
LONGITUDE	72°51'20.07"E
ELEVATION ABOVE MSL	23 ft

SOCIAL INFRASTRUCTURE

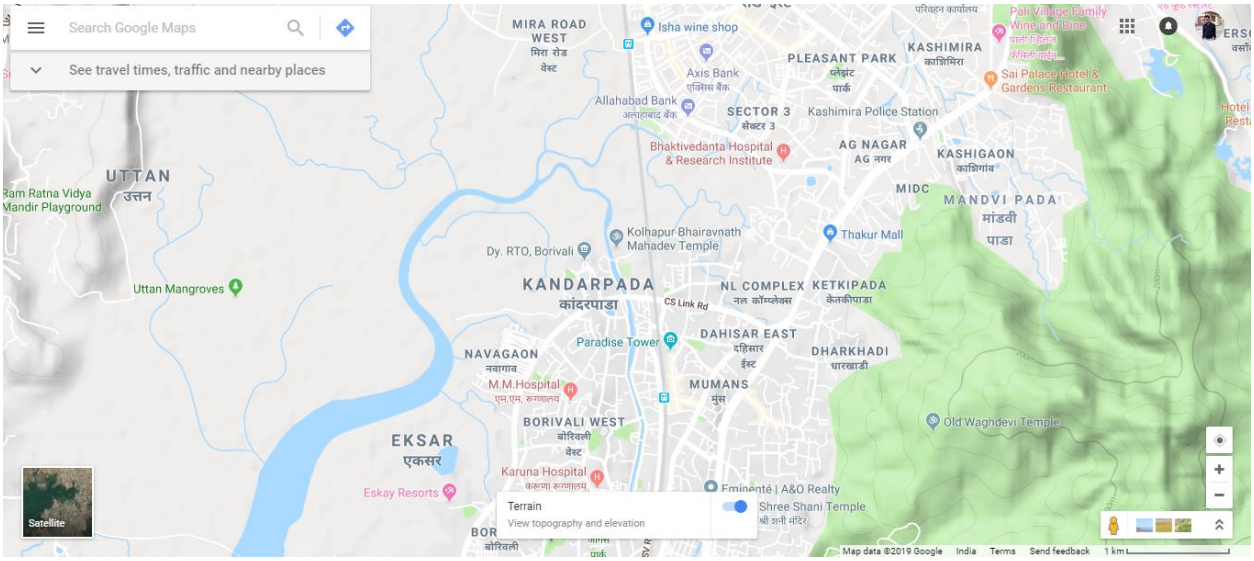
Currently the land is having existing structure which will be reconstructed as residential building. The surrounding area is well developed with infrastructure such as Schools, Hospitals, rail & road connectivity etc.

Infrastructure	**Name**	**Distance from project (km)**
Nearest Road	DP road 18.30 and 13.40 mt wide	Abutting
Nearest Hospital	Sukh sagar hospital	0.5
Nearest School	JBCN International School	1.11
Nearest college	Matruchhaya College of commerce and science	0.6

GOOGLE IMAGE OF THE PROJECT SITE



LOCATION MAP



TOPOGRAPHY

AREA STATEMENT

The area details is given as below

		PROFORMA 'A'	
A		AREA STATEMENT	
1		AREA OF PLOT AS PER PRC	2110.30
	a	AREA OF RESERVATION IN PLOT	
	b	AREA OF ROAD SETBACK	—
	c	AREA OF DP ROAD 13.40 M WIDE DP ROAD BENEFIT	404.12
2		DEDUCTION FOR	—
	(A)	FOR RESERVATION/ROAD AREA	—
		(a) ROAD SET-BACK/ WIDENING AREA TO BE HANDED OVER TO MCGM (100%) (REG NO. 16)	—
		(b) PROPOSED DP ROAD TO BE HANDED OVER TO MCGM (100%)(REG NO. 16)	—
		(c) (i) RESERVATION AREA (PLOT) TO BE HANDED OVER TO MCGM (100%) (REG NO 17) (ii) RESERVATION AREA AS PER AR TO BE HANDED OVER TO MCGM (100%) (REG NO 17)	—
		TOTAL RESERVATION/ROAD AREA	—
	(B)	FOR AMENITY AREA	—
		(a) AREA OF AMENITY PLOT/PLOTS TO BE HANDED OVER AS PER DCPR 14(A)	—
		(b) AREA OF AMENITY PLOT/PLOTS TO BE HANDED OVER AS PER DCPR 14(B)	
		(c) AREA OF AMENITY PLOT/PLOTS TO BE HANDED OVER AS PER DCPR 35	—
		TOTAL AMENITY AREA	—
			—
			—
	(C)	DEDUCTION FOR EXISTING BUILT UP AREA TO BE RETAINED IF ANY	—
		(a) LAND COMPONENT OF EXISTING BUA PER REGULATION UNDER WHICH DEVELOPMENT WAS ALLOWED	—
3		TOTAL DEDUCTION [2(A) + 2(B) + 2(C)]	—
4		BALANCE AREA OF PLOT (1 MINUS 3)	2110.30
5		PLOT AREA UNDER DEVELOPMENT	2110.30
6		ZONAL (BASIC) FSI (0.50 OR 0.75 OR 1 OR 1.33)	1.00
7	(a)	PERMISSIBLE BUILT UP AREA AS PER ZONAL (BASIC) FSI (5*6)	2110.30
	(b)	PERMISSIBLE BUILT UP AREA AS PER REG 30(C) PROTECTED DEVELOPMENT	—
8		ADDITIONAL BUA AS PER REG 30(A)(6)(a)	—
		(a)ADDITIONAL BUA FOR 2(A)(c)(i) and 2(B) ABOVE WITHIN THE CAP OF 'ADMISSIBLE T.D.R' AS PER TABLE NO 12 ON BALANCE PLOT.	—
		(b) ADDITIONAL BUA FOR 2(A)(a) and 2(A)b ABOVE TO BE UTILISED OVER AND ABOVE PERMISSIBLE FSI AS PER COLUMN NO 7 OF TABLE 12 OF REGULATION 30(A) AND TO BE MENTIONED IN TABLE 12(A) OF REG 32. (100%, 200% ,250%).	—
		(c) ADDITIONAL BUA IN CASE OF 2(A)(c)(ii) AS PER REG 17(1) NOTE 20(vi) &(vii) AS PER AR POLICY ON REMAINING PLOT (Y% AS PER TABLE NO 5 OF REG 17(1)	—
		TOTAL ADDITIONAL BUA.	—
9		DP ROAD AREA EQUAL TO AREA OF LAND HANDED OVER	404.12
10		ADDITIONAL BUA /INCENTIVE BUA WITHIN THE CAP OF ADMISSIBLE TDR AS PER TABLE 12 ON BAL. PLOT.	...
	(a)	IN LIEU OF COST OF CONSTRUCTION OF AMENITY BUILDINGS AS PER REG 30(A)(6)(b).	—
	(b)	50% OF REHAB COMPNENT AS PER REG 33(7)A (286.90X50%)	143.45
	(c)	15% OF SR NO 7(b) ABOVE OR 10SQ.M PER REHAB TENEMENT AS PER REG 33(7)b	—
		TOTAL ADDITIONAL BUA / INCENTIVE AREA	—
11		BUA DUE TO ADDITIONAL FSI ON PAYMENT OF PREMIUM AS PER TABLE NO 12 OF REG NO 30(A) SR NO 5 (2110.30X50%) = 1055.15	1055.15
12		BUA DUE TO ADMISSIBLE TDR AS PER TABLE NO 12 OF REG NO 30(A) AND 32 (2110.30X1)= 2110.30	—
	(a)	GENERAL T.D.R - SR NO 5 X 50% OR 70% OR 90% OR 100%, 80% OR 80% MAX (2110.30X80%) = 1688.24 / 1688.24-143.45-404.12= 1140.67	1140.67
	(b)	SLUM TDR SR NO 5 X 50% OR 70% OR 90% OR 100%, 80% OR 20% MIN (2110.30X20%)	422.06
		TOTAL TDR 12 (a)+12(b)	1562.73
13		PERMISSIBLE BUILT UP AREA (7+8+9+10+11+12)	5275.75
14		EXISTING FLOOR AREA (A&B WING) = 2329.20 AS PER APPROVED O.C PLANS	2329.20
14 A		BALANCE PERMISSIBLE BUILTUP AREA = (13-14)	2946.55
15		PROPOSED BUILT UP AREA	
	(a)	RESIDENTIAL (WING C)	2690.49
	(b)	NON RESIDENTIAL	243.89
	(C)	TOTAL PROPOSED BUILTUP AREA (14+ 15 (a)+(b) +(c))	5263.58
		TDR GENERATED IF ANY AS PER REG 30(A) AND 32 FOR UNUTILISED BUA ON PLOT.	—
16		FUNGIBLE COMPENSATORY AS PER REGULATION NO 31(3)	—
	(a)	PERMISSIBLE FUNGIBLE COMPENSATORY AREA FOR REHAB COMPONENT W/O CHARGING PREMIUM	—
	(b)	FUNGIBLE COMPENSATORY AREA AVAILED FOR REHAB COMPONENT W/O CHARGING PREMIUM	100.42
	(c)	PERMISSIBLE FUNGIBLE COMPENSATORY AREA BYCHARGING PREMIUM RESIDENTIAL NON-RESIDENTIAL	—
	(d)	FUNGIBLE COMPENSATORY AREA AVAILED BYCHARGING PREMIUM	
		WING C RESIDENTIAL [illegible] = 941.67 SQ.MT 941.67-100.42 =841.25	841.25
		WING C NON-RESIDENTIAL [illegible] = 85.36 SQ. MT.	85.36
		TOTAL RESIDENTIAL +NON RESIDENTIAL [illegible]	926.61
17	(a)	TOTAL BUILT UP AREA PERMISSIBLE INCLUDING FCA 13+ 16 (b)+16(c)	6302.78
	(b)	TOTAL BUILT UP AREA PROPOSED INCLUDING FCA (14 +15a+15b+16(b)+16(d))	6290.61
18		FSI CONSUMED ON NET PLOT [13/4]	—
B		TENEMENT STATEMENT	—
	1	PROPOSED AREA OF THE PLOT	6290.61
	2	DEDUCTION OF NON-RESI. AREA [SHOPS ETC.]	329.25
	3	AREA FOR TENEMENT [1-2]	5961.36
	4	TENEMENTS PERMISSIBLE [450T / HECTARE]	268.26
	5	TENEMENTS PROPOSED	75.00
	6	TENEMENTS EXISTING	56.00
	7	TOTAL TENEMENTS ON THE PLOT	131.00
C		PARKING STATEMENT	—
	1	PARKING REQUIRED BY REGULATIONS FOR (WING A -B)	7.00
		PARKING REQUIRED BY REGULATIONS FOR (WING C)	36.00
		TOTAL PARKING REQUIRED	43.00
	2	TOTAL PARKING PROVIDED FOR	62.00
		(i) CAR	—
	3	PROVIDED PARKING	—
	4	PARKING CONDONED	—
D		TRANSPORT VEHICLE PARKING STATEMENT	—
		PARKING REQUIRED	
		PARKING PROPOSED	
E		LOADING & UNLOADING STATEMENT	
	1	LOADING & UNLOADING REQUIRED	
	2	LOADING & UNLOADING PROPOSED	

PROPOSED BUILDING DETAILS WITH TENEMENTS

No. Buildings	Configuration
01 (Wing C)	Gr + 21st Floors

PROPOSED PARKING DETAILS

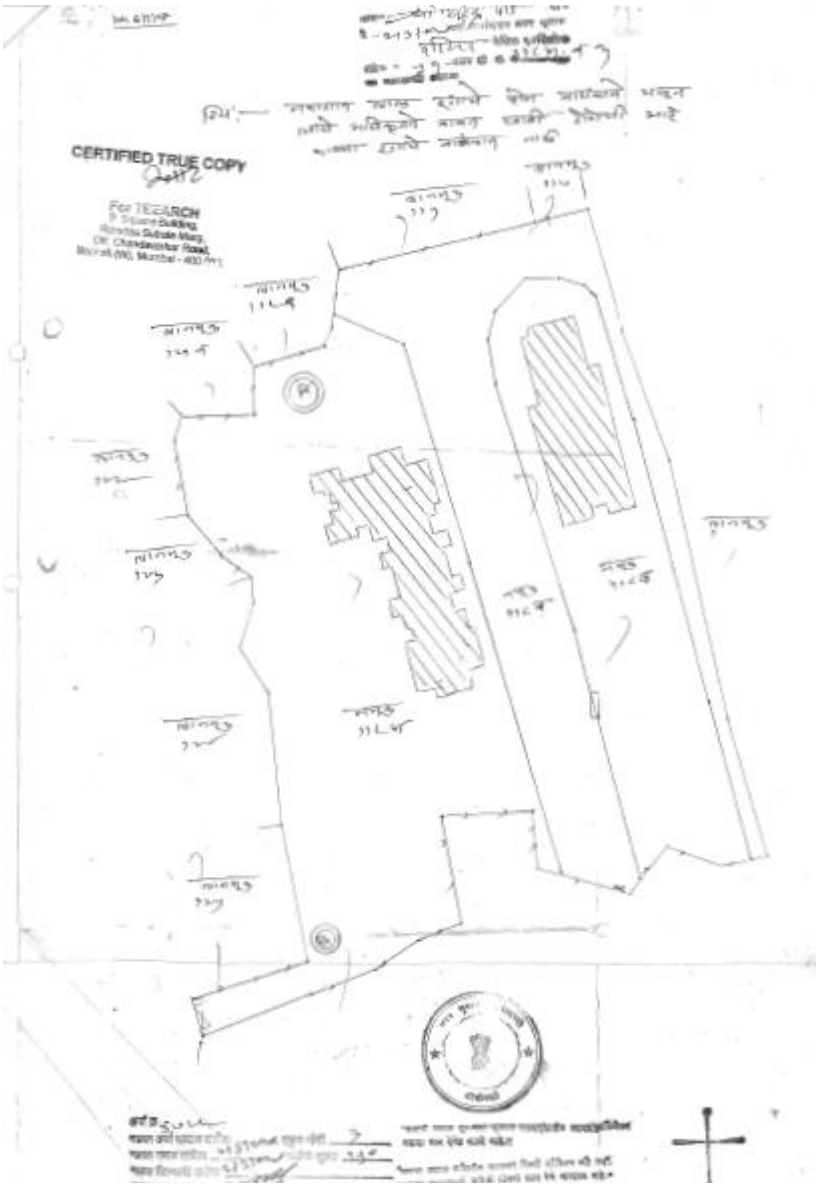
Carpet Area of Flat	Criteria	Nos. of Flats	Parking Required
Upto 45Sq.m	1 for 4 T/S	70	17.5
45-60	1 for 2 T/S	1	0.50
Visitors parking (25%)	-	-	4.50
Total			22.50
Total Parking Required			23.0
Total Parking provided			76.00

PARKING STATEMENT NURSING HOME

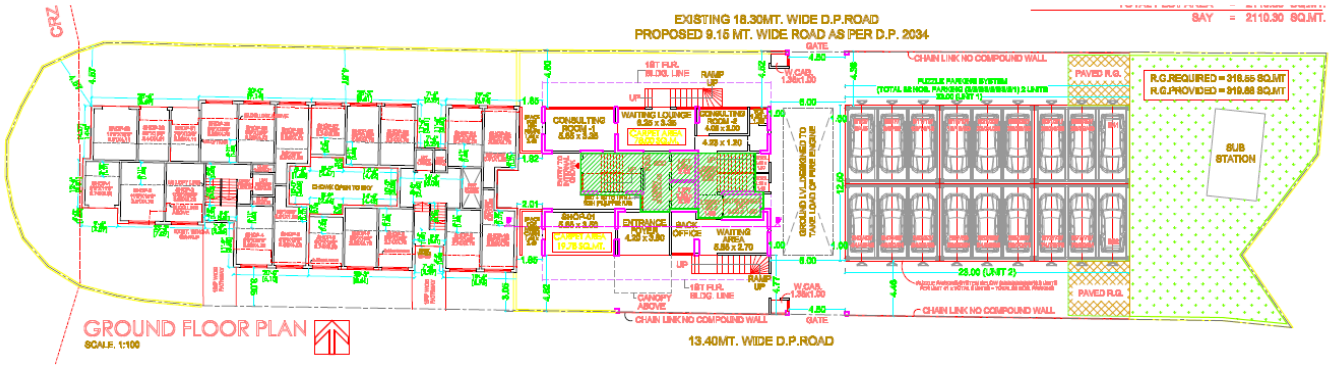
TOTAL BUILT UP AREA [343.02 - 23.05 (SHOP AREA)]	=	319.97 SQ.M.
PARKING SPACES REQUIRED FOR, CARS AS PER D.C. REGU. 1991 No. 38 (2) TABLE - 15 S.No.8		
FOR EVERY 150 M² FLOOR AREA, ONE PARKING SPACE REQD.		
TOTAL PARKING SPACES REQUIRED (319.97/150.00) = 2.13 NOS.	=	02.00 NOS
ADDITIONAL 10% VISITORS	=	0.21 NOS
TOTAL PARKING SPACES REQUIRED	=	02 NOS
TOTAL PARKING SPACES PROVIDED	=	03 NOS

PARKING STATEMENT SHOPS

FLOOR	AREA	TOTAL AREA	PARK PERMISSIBLE AS PER D.C. RULE	PARKING REQUIRED
GR. FLOOR	SHOP AREA	18.78	1 PARK/ 40.00 SQ.MTS. UP TO 800	0.49 NOS
ADDITIONAL VISITORS PARKING 10%				0.05 NOS
TOTAL PARKING REQUIRED				0.54 NOS
SAY				1.00 NOS
TOTAL PARKING PROVIDED				3.00 NOS



CTS PLAN OF THE PROPOSED PROJECT



LAYOUT PLAN

NEED OF THE PROJECT & IMPORTANCE

The future of redevelopment in Mumbai city is very bright since there are constraints on the availability of open land within the city and suburban limits coupled with fast growing demand for houses and shortage of housing stock. There are thousands of buildings which are in bad shape and dilapidated due to their age, atmospheric wear and tear and other reasons. They have reached a stage where it is not possible to carry out structural repairs and rehabilitation as the same are not economically viable and may not be guaranteed for more extended service life.

Redevelopment of such old building has become a necessity since many buildings collapse each year, killing or injuring no. of people.

DEMAND SUPPLY GAP

Mumbai realty market is seeing increased sales of redeveloped projects as compared to the newly launched projects Redevelopment projects in prime areas such as Parel, Chembur, Andheri, Kandivali and suburban area are doing excellent business. “These projects provide affordable housing in the heart of the city,” is cited as one of the major reasons of the popularity of redevelopment project.

Land use pattern: The proposed project is a residential project. The proposed land is non-agricultural land. The proposed land use is residential; hence there will be no change in land use pattern.

PROJECT SCHEDULE & COST ESTIMATES

The proposed project after receiving all approvals will take into account a period of 3 year for completion. The estimated cost for the project is Rs. 10 Crores.

PROPOSED INFRASTRUCTURE

- **WATER REQUIREMENT & DISTRIBUTION**

  The water requirement for the proposed project will be met from MCGM/ Recycled water. The total water requirement for the proposed project is estimated to be about 45 KLD

S.N.	Particulars	Details
1	Number of Tenements	66
2	Domestic Water Req. (KLD)	30
3	Flushing Water Req. (KLD)	15
4	Total Water Req. (KLD)	45
5	Total Sewage Water generation (KLD)	36

- **POWER SUPPLY**
  - Source: Reliance Energy
  - Requirement: 660 KW
  - DG Sets for Back Up: 200 KVA

- **SOLID WASTE GENERATION**

S.N.	Particulars (TPD)	TOTAL
1	BIO-DEGRADABLE	99 **(Kg/Day)**
2	NON-BIO-DEGRADABLE	66 **(Kg/Day)**
3	TOTAL SOLID WASTE	165**(Kg/Day)**

Solid waste generated will be segregated in Bio-degradable and Non-Bio-degradable. The Bio-degradable waste will be composted and Non-Bio-degradable waste will be handed over to the authority of MCGM. The sewage generated will be connected to soak pit & overflow will be connected to Municipal sewer.

A first aid facility will be provided during the construction as well as operation phase.

In order to reduce water demand during construction phase ready mix concrete will be used.

Vehicles hired for bringing construction material will be checked for good condition & pollution check certificates.

DISASTER MANAGEMENT PLAN

Disaster Management Plan (DMP) is made by considering all the factors responsible for management of any small or big disaster. Emergency prevention through good design, operation, maintenance and inspection are essential to reduce the probability of occurrence and also making the occupiers aware of what to do in case of any emergency. However, certain operation and practices may lead to unwarranted situation wherein disaster scenario can emerge. The DMP, therefore, addresses to mitigate the effects of such situation with a view to bring restoration of normalcy at the earliest.

The overall objective of a disaster management plan is to make use of the combined resources created or available at the site and/or off-site services to achieve the following:

- To minimize the effects of the accident on people and property;
- Effect the rescue and medical treatment of casualties;
- Safeguard other people, outside the project boundary;
- Evacuate people to safe areas with utmost care and with minimum casualties;
- Inform and collaborate with statutory local and state authorities;
  Initially contain and ultimately bring the incident under control;
- Preserve relevant records and equipment for the subsequent enquiry into the cause and circumstances of the emergency;
- Investigate and take steps to prevent recurrence of similar incidents.

STRUCTURE OF DMP

The Disaster Management Plan provides risk analysis and precautionary measures of the following aspects:

- Fire (all types),
- Earthquakes,
- Floods,
- Cyclones,
- Terror strikes/ blasts,
- Biological Disaster,
- Power failure, Water unavailability, road congestion, communication failure, Sea level rise and others.

DISASTER AND RISK ANALYSIS

TYPE OF DISASTERS AND RISKS

The types of disasters that can affect the proposed development are as follows:

- Fire and/or explosion because of LPG gas,
- Leakage of flammable material and catching fire,

- Natural calamities like earthquake, cyclone etc,
- Terrorist attack,
- Power failure, road congestion, communication failure,
- Water logging/ flooding of the surroundings and
- Agitation/forced entry by external group of people.

Since the site is not located near any active industrial area, risks associated with industrial hazards are not considered. In the sections below, the identification of various hazards is addressed qualitatively, which gives a broad identification of risks involved in the operation of the proposed project. Based on the risk assessment of various hazards, disaster management plan is formulated and presented here.

FIRE
List of Major Fire Hazards:

Heat producing devices: Drying (both in the laundries and laboratories), cooking, heat producing devices such as hot plates and space heaters.

Electrical equipment: Short circuits and malfunctioning equipment.

Causal/Contributing Factors: Casual factors include heat source, equipments involved in the ignition, item first ignited, and factors contributing to ignition. These factors describe what, how and why some form of heat ignited the specific material involved.

Causes include:

- Cooking/heating equipment
- Electrical
- Open flame or ember
- Appliance, tool or air conditioning
- Child playing
- Other heat source
- Natural causes: earthquake, volcanic eruption and lightening
- Other equipment
- Smoking material

Contributing factors

- Principal factors contributing to fires across the globe include:
- Wood shingle / thatched roofs
- High wind
- Congested access
- Inadequate water distribution system
- Lack of exposure protection
- Inadequate public protection (i.e. fire department inadequacies)
- Unusual hot or dry weather conditions
- Delay in discovery of fire
- Inadequate personal fire protection
- Delay in raining the alarm

PRECAUTIONARY MEASURES:

The threat of fire in buildings is constant and if adequate precautionary measures are not taken, the consequences can be grave. Therefore, the following basic precautions are highly recommended.

- Good House Keeping must be ensured.
- Always use ashtrays while smoking and deposit smoked butts in them after extinguishing.
- All receptacles for waste should be emptied at regular intervals.
- Faulty electrical appliances should be repaired/ replaced immediately.
- All the high voltage points and instruments should be marked clearly.
- Switches and fuses should conform to correct rating of circuit.
- Welding /Cutting jobs should be carried out under strict supervision.
- Keep smoke/Fire Check doors closed.
- Keep means of escape clear of obstructions.
- Fire Rescue drills should be carried out at regular intervals.
- Emergency organization must be setup.
- Don’t dispose of lighted cigarette ends carelessly.
- Don’t plug too many electrical appliances in one socket.
- Don’t paint fire detector/sprinkler.

SEISMIC ENVIRONMENT & PRECAUTIONS

As per the Seismic Zoning Map of India, MMR region falls under Seismic Zone-3. There have been claims that MMR is prone to moderate intensity earthquakes ranging up to about 6.5 on the Richter scale. MMR lies over more than 10 seismic fault lines. Major fault lines lie along the Thane creek, Ulhas River, the Manori and Borivali creeks and the lakes. To the west, a fault line stretches from Colaba to Vasai, touching Malabar hill. The coastal plain to the east of MMR is prone to earthquakes of even higher intensity, up to 7.5 on the Richter scale. In this region the

black volcanic rocks of the Western Ghats have been eroded by the action of the sea. The resulting relief of pressure on the underlying rocks has created many fault lines along the coast.

PRECAUTIONARY MEASURES:

- Builder would repair deep plaster cracks in ceilings and foundations. Expert advice would be taken if there are signs of structural defects.
- Follow BIS codes relevant to your area for building standards.
- Fasten shelves securely to walls.
- All the occupiers would be made aware to place large or heavy objects on lower shelves.
- Information would be provided to store breakable items such as bottled foods, glass, and china in low, closed cabinets with latches.
- Hang heavy items such as pictures and mirrors away from beds, settees, and anywhere people sit.
- Brace overhead light and fan fixtures.
- Repair defective electrical wiring and leaky gas connections. These are potential fire risks.
- Secure a water heater, LPG cylinder etc., by strapping it to the wall studs and bolting it to the floor.
- Store weed killers, pesticides, and flammable products securely in closed cabinets with latches and on bottom shelves.
- Identify safe places indoors and outdoors for occupiers
- Under strong dining table or bed
- Against an inside wall.
- Away from where glass could shatter around windows, mirrors, pictures, or where heavy bookcases or other heavy furniture could fall over.
- In the open, away from buildings, trees, telephone and electrical lines, flyovers, bridges.
- Educate every occupier through training and other community awareness program.
- Emergency telephone numbers (doctor, hospital, police, etc) would be displayed at every floors and a booklet of the same would be shared with all the members of the society.

TERROR STRIKES AND BLASTS

Terrorist attacks on buildings may not be eliminated completely, but the effects of these attacks on buildings and structures can be mitigated to a large extent with precautions and pre-emptive strategies. Understanding the building and its functional use, and possible threats due to terrorist attacks, is essential in identifying strategies that are most likely to be effective to prevent detrimental effects of the attacks. The cost of upgrading the building for a “certain level” of resistance against terrorist threats may not be significant as compared to the overall lifetime costs of the building (including the land value, and security monitoring). This chapter describes these aspects along with financial and techno-legal issues related to terrorism risk management.

Explosion:

This refers to air-borne or grounded detonation of explosive devices on or near targets. The detonator can be carried by hand, delivered by vehicles, hurled as projectiles, or placed in the usual supplies to the building including mail. The detonators can be non-nuclear type or nuclear type. Explosions almost instantaneously damage the built environment. If more devices than one are used in a chain, then the duration of the threat is enhanced and the extent of damage is greater. The extent of damage is determined by the type, quality and quantity of explosive used, and the stand-off distance from the structure. Damage can vary over a spectrum of possibilities - from non-structural element loss, structural element damage, structural element collapse, to progressive failure of part/whole building.

Arson:

This refers to initiation of fire at or near targets. The fire can be initiated by direct contact or by a projectile carrying an accelerant. The threat can last from minutes to hours. The extent of damage is determined by the type and quantity of device/accelerant used in arson, and by the type of materials present at or near targets. Again, damage can vary over the whole spectrum from non-structural element loss, structural element damage, structural element collapse, to progressive failure of part/whole building.

Armed Attack:

This refers to tactical assault or sniper attacks from remote location. The attack can be by ballistics using small arms, or by stand-off weapons using rocket propelled grenades or mortars. The armed attack can last from minutes to days depending on how agile the counter-attack is in wearing-off and over-powering the aggressors. The extent of damage is contingent on the intent and capabilities of the attacker.

PRECAUTIONARY MEASURES:

The precautionary measures that can be taken in such kind of disasters are difficult to know as it is difficult to predict the magnitude of attack. Still some precautions can be taken to avoid such disasters as far as possible:

- Security should be alert 24 hours and should check all the persons entering the premises.
- A log book should be maintained at the exit points and all the vehicles should be scanned for explosives and arms
- Suspected persons should be checked well and the building premises should be patrolled regularly.
- The occupants should also be vigilant and should not allow strangers to enter the building or house.
- Any individual who finds an unidentified vehicle/object or unknown belongings in the premises should inform the security personal.

SEA LEVEL RISE

Sea level has risen about 40 cm in the past century and is projected to rise another 60 cm in the next century. Sea level has risen nearly 110 meters since the last ice age. Due to global warming, average rise of sea level is of the order of 1.5 to 10 mm per year. It has been observed that, sea level rise of 1 mm per year could cause a recession of shoreline in the order of about 0.5 m per year.

In the project it is proposed to provide Sewage treatment plant and storm water drainage system which will discharge the excess water directly to the nalla hence the water supply will not be affected. The project receive drinking water from the nearby lakes, the chances of sea level rising will not affect the project. As the life of any concrete structure is 60-80 yrs., the increase in sea level is predicted to be 1 m. for this century (IPCC 20071) thus will not have an early impact.

OTHER DISASTERS (POWER FAILURE, WATER UNAVAILABILITY, ROAD CONGESTION, COMMUNICATION FAILURE ETC)

Other disaster might occur due to any unknown cause that may affect the occupants of the building adversely. The disaster may include power and communication failure, Traffic congestion, Heat/ Cold wave, water shortage or drought. Some of these events are common in some part and other in other part of this region. As this project is located in the MMR the control, counter measures, relief, rescue and restoration are the issues of National priority. Hence the disasters are well mitigated without any delay by government agencies and other allied departments

PRECAUTIONARY MEASURES:

Most of the other disasters are rare and have not occurred in the region or their occurrence does not make the conditions critical. It is because MMR is the economic capital of the country and hence dealt very efficiently by the government authorities. Nevertheless following precautions should be considered at the local and individual levels to avoid the atrocities:

- Sufficient water should be stored at community and household/ individual levels in case a water shortage occurs for a prolonged period.
- Do not be dependent on a single communication channel, in case the sever failure occurs of a service provider.
- Alternative energy sources should be kept as a secondary line of action in case of power failure, which may include traditional illumination sources and battery operated devices.
- The households should retain protective artifacts to resist adverse climatic conditions such as heat or cold wave.

To avoid the adverse effects of traffic congestion, the occupants should not be dependent on a single means of travel and they should be aware of all the alternative routes and study the map of their locality in detail.

PRELIMINARY HAZARD ANALYSIS (PHA)

A preliminary hazard analysis is carried out to identify the major hazards associated with the functioning of project.

[Intergovernmental Panel on Climate Change (IPCC). 2007. Climate Change 2007: The Physical Science Basis. Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change. Solomon, S., Qin, D., Manning, M., Chen, Z., Marquis, M., Averyt, K.B., Tignor, M. and Miller, H.L. (Eds.). Cambridge, UK, and New York, NY: Cambridge University Press]

HAZARDS, RISKS AND VULNERABILITY.

Hazard Component	Potential Risk	Vulnerability/Probability
D.G.	Mechanical hazards and fire hazards in Lube oil system Cable galleries Short circuits	Low: The DG sets are used only in case of power failure, which is a rare occasion in this part of MMR. The lubrication oil and diesel are required and stored in small quantities. Also new DG sets come in an acoustic enclosure which also helps in reducing direct exposure to atmosphere.
Power Trans-formers	Fire and explosion	Low: Transformers are always kept in open and outside the building with proper fencing.
Electrical Control room	Fire in cable galleries and switches Static electricity due to improper earthing and bonding Fire, earthing and bonding may result in Power failure	Medium: The risk might arise from low quality of insulation material or maintenance or alteration by untrained man power. It may also arise from voltage fluctuations.
LPG Cylinders	Fire and explosion due to	Low: Probability of cylinder related

storage	leakage	fire and explosion is low. Also Mahanagar Gas Ltd. is providing piped gas supply to the central part of MMR at present. Piped gas supply is less dangerous than cylinder supply. The scheme will soon reach the project site which will reduce the probability of this risk
Natural Disasters	Earthquake and cyclones may damage the electrical system, lifts, and water and sewage lines. It may also damage the external envelop and may cause the building to collapse.	Low: MMR lies in Seismic Zone III which is one of the least vulnerable zones. MMR does not have history of earthquakes. MMR lies on west cost of India which is less prone to severe atmospheric changes resulting in to cyclones, hurricanes, storms etc.
Topography and Drainage	Flooding. Water logging may curtail access to daily needs and transport facilities.	Low: The risk may arise because of chocking of natural and manmade storm water drainage along with proximity to sea shore and high rain fall of the region The site is located in a region with sufficient slope.
Terrorist attack, blasts etc.	Forced acquisition of building and hostage situation may result from terrorist attack	Low: The project is not a high priority target or important icon. The location is in suburbs and not prime or central
Mob attack	Agitated mob attack will result in life and property damage	Low: The area is residential. Does not have very high density population pockets. As there are no factories, Govt. offices, commercial hubs or job centers which would create a mob. The project also does not have any religious structure which may create communal tension and hence mob attack.
Biological Disaster	Disease outbreak, Epidemics causing death	Medium: MMR is well connected all means of transportation to the entire country and the outside so the risk of biological disaster is considerable. However the city has well equipped machinery to deal with such occurrences thus the overall risk remains medium

Other	Power failure, Water unavailability, Road congestion, Communication failure	Low: Such types of risks are rarely created in MMR suburbs as the response is very quick and services are immediate. Hence all such events are corrected and services are resorted in very short time Power failure will not affect the project seriously as DG sets are provided for all essential services With water recycling and sufficient storage capacity the project provides sufficient buffer for any short term water unavailability. In case of prolonged problem the project is well within municipal limits and can avail tanker water supply The project is located on the fringe of developed area on the, thus there is medium chances of road congestion.

DISASTER PREPAREDNESS

ONSITE

The plan will includes alarm equipments and other measures and the budge for capital and running coast of the plan. Onsite preparedness for all the disasters would include a disaster preparedness plan which includes an On-site team of DMP that will be responsible for majority of actions taken during a disaster. The plan also consists of emergency equipments and disaster emergency kits. It also includes emergency communication plan for each household, an awareness programs for each occupant and drills including drill frequency and formats.

Alarms Equipments and other Measures

It is important that building must be adopted with proper fire management system. Fire could take place through various accidents; one of them is through electrical faulty materials. Hence, all the electrical wiring of the proposed building would be made as per the Government standards. Also maintenance of these electrical wires would be carried out at regular intervals. This would generate more job opportunities for electrical personnel of this area. All the electrical wiring check up would be carried out by registered engineers of MCGM

Fire and smoke alarm would be installed at every floor. An alarm system will be developed and all the occupants will be informed and trained regards the actions taken and operations necessary to efficiently use the system. Appropriate measures would be taken for their proper functioning.

The functioning of these fire alarms would be checked every week by society authority. A report of the same would be submitted to society secretary. Fire protection system will be as mandated to suit the NOC by the Chief Fire Officer.

- To meet the requirements, the following will be provided;
- Fire protection system will be as mandated to suit the NOC by the Chief Fire Officer.
- To meet the requirements, the following will be provided;
- Courtyards will be paved suitably to bear the load of fire engines
- Walls enclosing lift shafts will be fire resistant.
- Landing doors and lift car doors will be fire resistant at least for one hour.
- Electrical meter room will be on the ground floor and it will be adequately ventilated.
- The electrical shaft will be sealed with non-combustible material like vermiculite.
- The lighting of the escape route will be on independent circuits.
- An underground and overhead water storage tank having appropriate capacity will be provided.
- Automatic sprinklers will be provided.
- Hydrants will be provided as per CFO regulations within the confines of the site on the wet risers.
- Portable fire extinguishers of dry chemical powder of 10 kg capacity are provided in the lift machine room electric meter room, basement and each parking floor. As well as buckets of dry and clean sand are kept at all these places.
- Refuge area will be kept within the building as per CFO regulations, which will be segregated by the brick masonry partition wall of '9' thickness and its door will be half an hour fire resistant. The refuge area will have adequate drinking water facilities.

Awareness program

The occupiers of the proposed project would be given the chapter 'Precautionary Measures' as a basic awareness document. The 'Secretary' of the society will ensure wide distribution of the above mentioned document among the users. In every bi-annual meeting of the society the secretary would call external professional who would lecture the users on the following points.

- Possible disasters that may occur in their region.
- The precautionary measures.
- Importance of family disaster plan and how to make it
- Use of emergency equipments.
- Location of all the reference documents and systems.

All the households will be provided with a copy of precautionary measures, Action taken and a site specific evacuation plan for each of the disasters.

OFF-SITE

Looking at the various disasters occurring in the country The Gazette of India passed the "The Disaster Management Act" in 2005 to provide for the effective management of disasters and for

matters connected therewith or incidental there to. It encompasses all the aspects of the disasters that may occur in the country. It defines all the aspects of disaster and related terms. Under the Disaster Management Act, a national authority under the central government and a national committee has been set along with the advisory board. Under these heads, a state level disaster management authority is formed which will be responsible for each state, followed by district level disaster management authority. The National and state level executive committees have been set to look after the disasters and its management. The powers of each head and body have also been defined. It also mentions a National Disaster management plan for the entire country, along with regional, state level and district level disaster management plan. The article states the duties of all the members and the aspects that are to be included and dealt in each of the plan. It notes down the measure to be taken by the government of India and local authorities. It also mentions the roles of the National Institute of Disaster Management and the National Disaster Response Force.

Considering the above act it can be said that government authorities have set a comprehensive plan at national and regional level. In view of these levels it is essential to develop a local disaster management plan that considers site specific aspects.

EMERGENCY PREPAREDNESS PLAN

Off-site plan addresses all issues which can have impact out-site of the site. Off-site Emergency Plan has many components which need to be in place for effective plan.

Organization: There shall be warning systems, implementation procedures, and emergency control centers. In addition it also needs telephone numbers of related emergency key personnel. (E.g. fire station, police station, hospitals, etc.)

Communications: The communication part warrants the complete identification of personnel involved, call signs, and lists of telephone numbers of all concerned. The clarity of communication is the key to effective off-site emergency plan.

Specialized knowledge and information: In addition to expert list, detail of all hazardous substances stored/ kept at the site e.g. Diesel for DG sets and a summary of the risk associated with them shall be maintained. The report for the same must be submitted by Safety manager to the concern authority of the project. An information sheet about the hazards of these chemical and their toxic nature would be displayed at their storage site. Their storage area would be locked so that only authorized person would get a free access.

Role of Police Department: Formal duties of the police during an emergency include protecting life and property and controlling traffic movements. Their functions should include controlling bystanders, evacuating the public, identifying any serious problems, and informing all concerned.

Role of Fire Authorities: The control of a fire should normally be the responsibility of the senior fire brigade officer who would take over the handling of the fire from the site controller on

arrival at the site. The senior fire brigade officer should also have a similar responsibility for other events, such as explosions and toxic release. Fire authorities in the region should be apprised about the location of all stores of flammable materials, water and foam supply points, and fire-fighting equipment. They should be involved in on-site emergency rehearsals both as participants and, on occasion, as observers of exercises involving on-site personnel.

Role of Health Authorities: Health authorities, including doctors, surgeons, hospitals, ambulances, and similar other persons/institutions should have a vital part to play following a major accident, and they should form an integral part of the emergency plan.

Major off-site incidents are likely to require medical equipment and facilities in addition to those available locally, and a medical "mutual aid" scheme should exist to enable the assistance of neighboring authorities to be obtained in the event of an emergency.

Occupational Health and Safety: The facility will have many activities involved during construction, erection, testing, commissioning, operation and maintenance, where manpower materials and machines are the basic inputs. Occupational health and safety of all the people concerned will be a major part of the facility. The proposed facility to mitigate and minimize the adverse impacts of process, if any, has to ensure provision of appropriate and adequate occupational health and safety measures, including fire plans.

EMERGENCY RESPONSE IN THE EVENT OF DISASTER

In case of emergency due to any type of disaster a quick and immediate response is essential. This response depends on the actions taken by individuals to avoid or resist a disaster. Following are the actions to be taken:

Actions in the Event of Fire

- Extinguishing fires: A small fire at a point of leakage should be extinguished by enveloping with a water spray or a suitable smothering agent such as CO2 or DCP (Dry Chemical Powder). Fire fighting personnel working in or close to un-ignited vapour clouds or close to fire, must be protected continuously by water sprays. Fire fighters should advance towards the fire downwind.
- In case the only valve that can be used to stop the leakage is surrounded by fire, it may be possible to close it manually. The person attempting the closure should be continuously protected by water sprays, fire entry suit, water jet blanket and other suitable material. The person must be equipped with a safety belt and a manned lifeline. In case of rapid increase in decibel level of noise, evacuate the area, as there could have been over pressurization situation.

Relief and Rehabilitation

Relief authorities at the site would therefore:

- Encourage self-help in every activity of their day-to-day living.
- Encourage assistance for identification of dead, disposal of dead bodies, and disposal of damaged food stocks.
- Encourage contribution of labour (loading, unloading, distribution, temporary constructions, food distribution etc).
- Enlist assistance for updating records of damages and losses.
- Enlist assistance in maintenance of law and order.
- Enlist assistance in maintaining sanitation standards and disposal of waste.
- Promote cultural and recreational activities in order to protect the mental health.

Actions in case of Terror attack /Bomb Blast

In case of a terrorist attack or a bomb blast occupants should follow certain basics:

- Make sure you have a battery-powered radio or television to listen to government advisories. Assemble emergency supplies for home and car.
- Make a family emergency plan. Coordinate with neighbors.
- Mentally rehearse what you would do in an emergency.
- Prepare an emergency Individual emergency kit that includes:
  - Medicine and other first-aid supplies, flashlights, plenty of batteries, a battery-powered radio or television, bottled water, non-perishable food and a manual can-opener, sleeping bags, clothing, sanitation supplies, birth certificates, passports, driver's licenses and other important documents in a waterproof container, a credit card, cash, an extra pair of glasses.

Action in case of other disasters

Occurrence of any incident, which is very rare or unknown, whatsoever has to be dealt in a systematic manner. The other forms of disasters can be drought, water supply failure, electricity or communication failure, traffic congestion, heat/cold wave and any other emergency. In most of the event, where the occupants do not have idea about what exactly has happened creates a dangerous situation.

Due to less knowledge about the situation that surrounds them, the people start panicking. Hence due to a panic situation all the people start reacting in many kinds and manner. Eventually such events result in unnecessary increase of risks to the lives. To avoid severe impacts of such incidents following actions are necessary especially by the occupants:

- Should get reliable information of the situation
- Should avoid rumors and unreliable information.
- Have to make decision accordingly if it is necessary to evacuate or stay inside.
- Family member should stay together as far as possible.
- Constant communication with the local authorities is to be maintained.
- Carry thick and water proof clothing and material that protects from heat and cold.
- Food, drinking water and other vital resources should be acquired and stored considering longer period of uncertainty.
- Not to panic and wait for the government agencies or reliable services to complete the task of mitigating the disaster.