

2021

M/s. Hubtown. Ltd.

**EXECUTIVE SUMMARY
OF THE PROJECT OF
PROPOSED SRA PROJECT
FOR
CRZ NOC**

**Plot Bearing C.T.S No. 20(Pt), 22(Pt), 23(Pt), 24(Pt),
32(Pt) & 38(Pt) of Worli Division, in G/South Ward,
Mumbai, Maharashtra.**

PROJECT SUMMARY

PARTICULARS	DETAILS
Proposed Project	“Proposed Residential Project under SRA Scheme
Location Of Site	Plot bearing C.T.S No. 20 (pt), 22 (pt), 23 (pt), 24 (pt), 32 (pt) & 38 (pt), Worli Division, G/South Ward, Mumbai. Maharashtra.
Total Plot Area	5, 565.00 Sq.m.
Proposed FSI Area	14,636.37 Sq.m.
Construction Area	27,386.10 Sq.m.
Cost Of The Project	Approx. Rs. 150 Cr.
Number Of Tenements	Sale: 213 Rehab: 280
Occupancy	2455 Nos.
Total Water Requirement	331 KLD
Sewage Generation	298 KLD
Sewage Treatment	1 Nos. of STP's: 300 KLD
Solid Waste Generation	1.2 TPD
Parking Provided	266

PROJECT DESCRIPTION

The proposed SRA project conceptualized by **M/s. Hubtown Ltd.** is located at Plot bearing C.T.S No. 20 (pt), 22 (pt), 23 (pt), 24 (pt), 32 (pt) & 38 (pt), Worli Division, G/South Ward, Mumbai, Maharashtra. As per the approved CZMP, the proposed project falls in CRZ II.

The plot area is 5,565.00 Sq.m.

The total construction area is 27,386.10 Sq.m.

M/s. Hubtown Ltd. is a renowned company with experience and successful long standing in the field of land development and construction. The Registered office is located at Hubtown Seasons, CTS No. 469-A, Opp. Jain Temple, R. K. Chemburkar Marg, Chembur (East), Mumbai – 400071.

M/s. Hubtown Ltd. has planned the concept of rehabilitating the slums with an objective to develop the land as per the Development plan of the city keeping in mind the social, economic as well as overall prosperity of the Mumbai and its dream of becoming an international city that is free of slums. Proposed SRA project consists of development of 3Rehab Buildings and 1 Composite Rehab & Sale Residential Buildings.

The Environmental Setting is given in Table 1 below,

TABLE 1 - ENVIRONMENTAL SETTING OF THE PROPOSED PROJECT.

S. N.	PARTICULARS	DETAILS
1	Latitude	18°59'52.71"N
2	Longitude	72°48'53.66"E
3	Present at site	Earlier was a Slum covered land. The slums are demolished. Currently Rehab 1, 2 & 3 Completed – OC granted. Sale Building is not started.
4	Nearest Road	Dr. Annie Besant Road (200 m.)
5	Nearest Railway Station	Lower Parel Railway station (1.9 km)
6	Nearest Airport	Chatrapati Shivaji International Airport (14 km)
7	Hills/Valleys	Nil
8	Ecologically sensitive zones within 15-km distance	Nil
9	Historical/ Archaeological places	Nil within 5-km radius
10	Nearest Defense and other Establishments	Nil within 5-km radius
11	Industries/Industrial area	Nil within 5-km radius
12	Seismic Zone	Zone –III

TABLE 2 - THE BUILDING DETAILS

BUILDING	BLDG. CONFIGURATION
REHAB BLDG 1	G +7
REHAB BLDG 2	G + 7
REHAB BLDG 3	G + 22
REHAB BLDG Wing A	G + 22
SALE	G + 38 th Floors.



FIGURE 1: GOOGLE IMAGE WITH PROJECT BOUNDARY MARKED=====



FIGURE 2: LOCATION MAP



FIGURE 3: SITE PHOTOGRAPH



FIGURE 4: SITE PHOTOGRAPH



FIGURE 5: DP Plan

MUNICIPAL CORPORATION OF GREATER MUMBAI

original plan set
No. 2400 - Disputed
10/11/08

Office of the
Chief Engineer
Development Plan
4th Flr, Extn. Bldg.
Mahapalika Marg,
Fort, Mumbai-400 001.
No. CHE/2711/DPC.
Date: 24.12.07

M/s. Akroti Nirman Pvt. Ltd,
201, Mukhyedhyapak Bhavan, Road No. 24,
Above Nityanand Hall, Sion(W),
Mumbai - 400 022.

Sub: Land comprised in C.S.No. 38(pt) and 32(pt)
of Worli Division at G/South Ward.

Sirs,

Ref: Your letter dt. 15.11.1997.

Under the revised Development Plan of G/South Ward, sanctioned by the State Government, the above land shown bounded black on the accompanying plan, returned herewith, is mostly designated as an existing Garden and partly reserved for the public purpose of Extension to Garden and Road Depot and except for widening, if any, of the existing road.

~~It is~~ The above land is situated in a Residential Zone.

The widening, if any, of the existing road will be as per the regular lines prescribed by the Executive Engineer (Traffic & Co-Ordination) whose office is situated at 5th floor, Municipal Head Office, Annex. Bldg, Mahapalika Marg, Fort, Mumbai-400 001.

The designation and reservation boundaries are subject to the actual description on site by this office staff.

Further, the land under reference falls within the Coastal Regulation Zone vide Government of India Notification under SO No. 114(E) of 19.2.1991.

The above remarks have been offered only from the zoning point of view without any site inspection or without any reference to the existence and status of the structures, if any, on the land in question etc.

Yours Faithfully,
[Signature]
Assistant Engineer
(Development Plan)
(City)P

Enc: Plan.

FIGURE 6: DP Remark

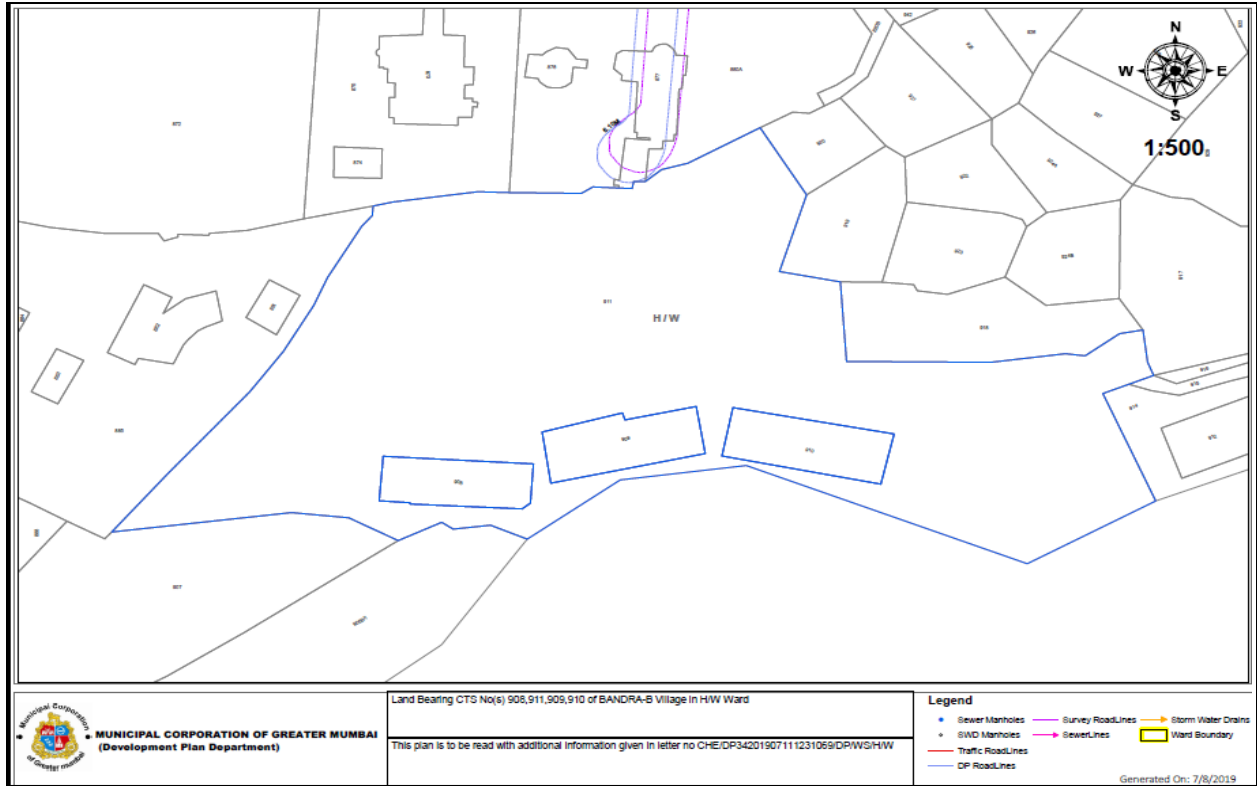


FIGURE 7: RL Remark

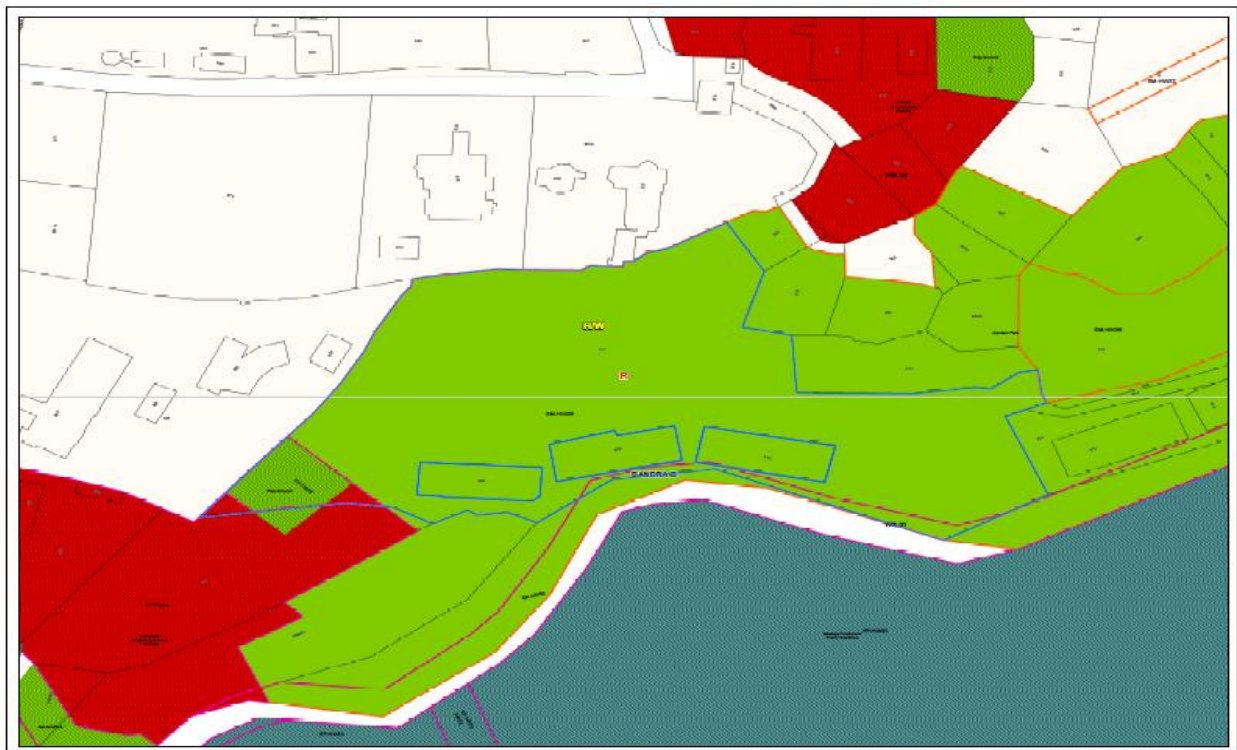


FIGURE 8: DP Plan



MUNICIPAL CORPORATION OF GREATER MUMBAI

NO. Ch.E./DP34201907111231069 D.P. Rev. dt. Refer Inward Number: H/W/2019/111231072 Payment Dated 08/07/2019

Office of the Chief Engineer (Development Plan)
Municipal Head Office, 5th Floor,
Annex Building, Fort,
Mumbai - 400 001

DP 2034 Remarks

To,

Mr./Mrs. sandeep 9870985014 gaikwad
Hubtown Ltd 1,RC Marg, Sector 4, Shanti Baug, Opp. Jain Temple Chembur East, Mumbai

Sub: Development Plan 2034 remarks in respect to Land Bearing C.T.S. No(s) 908,911,909 and 910 of BANDRA-B Village situated in H/W Ward, Mumbai.

Ref : Application u/no. H/W/2019/111231072 Payment Challan No. DP34201907111231069 Dated 08/07/2019 certifying payment of charges made under Receipt no. 18200045808 Dated 08/07/2019

Gentleman/Madam,

With reference to above, Development Plan 2034 remarks sanctioned by GoM in respect of subject land boundaries, shown in blue color boundary on the accompanied plan, are as follows.

Description	Nomenclature	Remarks
CTS No.	908,911,909 and 910	
Village	BANDRA-B	
Development Plan 2034 referred to Ward	H/W	
Zone [as shown on plan]	Residential(R)	
Sanctioned Roads affecting the Land [as shown on plan]	Existing Road	Present
	Proposed Road	NIL
	Proposed Road Widening	NIL
Reservation affecting the Land [as shown on plan]	ROS1.5(Garden/ Park)(Part of larger reservation)(908: 427.67 sqm, 911: 12400.55 sqm, 909: 498.80 sqm and 910: 512.42 sqm)	
Reservation affecting the Land [Sanctioned Modification]	SM NO: SM-HW36	Affected Area - 908 :427.666 sqm, 911 :12400.545 sqm, 909 :498.804 sqm, 910 :512.421 sqm
For description of Excluded Portion/Sanctioned Modification, please refer to the published plan on MCGM portal.		
Reservation abutting the Land [as shown on plan]	NO	
Reservation abutting the Land [Sanctioned Modification]	SM NO: SM-HW36	Plots - 908, 911, 909, 910
For description of Excluded Portion/Sanctioned Modification, please refer to the published plan on MCGM portal.		
Existing amenities affecting the Land [as shown on plan]	EE1.2+EE2.1(Primary & Secondary School + College)(Part of larger existing amenities)(911: 121.55 sqm) and EOS1.4(Play Ground)(Part of larger existing amenities)(911: 558.77 sqm)	
Existing amenities affecting the Land [Excluded Portion]	EP NO: EP-HW19 EP NO: EP-HW19	Affected Area - 911 :61.562 sqm Affected Area - 911 :618.765 sqm
For description of Excluded Portion/Sanctioned Modification, please refer to the published plan on MCGM portal.		
Existing amenities abutting the Land [as shown on plan]	NO	

This is electronically generated report. Hence personal signature is not required.

CHE/DP34201907111231069/DP/HW

Existing amenities abutting the Land [Excluded Portion]	EP NO: EP-HW19 EP NO: EP-HW19	Plots - 908, 909, 910 Plots - 908, 909, 910
For description of Excluded Portion/Sanctioned Modification, please refer to the published plan on MCGM portal.		
ROAD	EP NO: EP-HW53	Affected Area - 908 (Abutting), 911 :367.046 sqm, 909 (Abutting), 910 (Abutting)
For description of Excluded Portion/Sanctioned Modification, please refer to the published plan on MCGM portal.		
Whether a listed Heritage building/ site:	Yes / No	
Whether situated in a Heritage Precinct:	Yes / No	
Whether situated in the buffer zone/Vista of a listed heritage site:	Yes / No	
Whether a listed archaeological site (ASI):	Yes / No	
Whether situated in the buffer zone/Vista of a listed archaeological site (ASI):	Yes / No	
Land affected by Coastal Regulation Zone as per CZMP approved u/no. J-17011/8/95-1A.III dt. 19.1.2000	The land under reference falls within the Coastal Regulation Zone (CRZ) as shown in the location plan and development thereof shall be governed as per the Government of India notification under No : SO 114(E) of 19.2.1991 as amended upto date, the HTL (High Tide Line) indicated in DP remark is subjected to confirmation of the same by MCZMA or the appropriate authority. As per sanctioned CZMP, HTL/setback lines with map scale(as shown in accompanying document for block and location plan overview) with respect to plot(s) under reference i.e. CTS/CS/FP No(s) 908,911,909,910, of village, BANDRA-B, the land under reference falls under CRZ II Category. Therefore the development shall be governed as per the Ministry of Environment and Forest, Govt. of India, Notification No. 114(E) of 19.02.1991 as amended up to date.	
Note: The remarks are offered based on the records of CS/CTS boundaries/CS/CTS Nos available with this office. However the boundaries shown in the records of City Survey Office shall supersede those shown on the DP Remarks Plan.		
Demarcation: The Alignment of the proposed road/R.L. and boundaries of reservations and their area are subject to the actual demarcation on site by E.E.T&C./A.E.(Survey) as case may be.		
Remarks are offered only from the zoning point of view without reference to ownership and without carrying out actual site inspection and without verification of the status of the structures if any on the land under reference. Status of the existing road, if any, shall be confirmed from the concerned Ward Office.		
<p>The DP Remarks and Plan shall be read with notification no. TPB.4317/629/CR-118/2017/UD-11 dt. 8.11.2017, TPB.4317/778/CR-267/2017/UD-11 dt. 7.2.2018, TPB.4317/629/CR-118/2017/DP/UD-11 dt 8.5.2018 & TPB.4317/629/CR-118/2017/EP/UD-11 dt.8.5.2018 before granting any development permission on the land/s. (For the Sanctioned Modification & Excluded Portion the link for notification is as under:-</p> <p>Notifications: MCGM Home Page (portal.mcg.gov.in)> Ward & Departments> Chief Engineer - Development Plan>Docs> Sanctioned DP2034</p> <p>Plans: EP Sheets:- MCGM Home Page (portal.mcg.gov.in)> Ward & Departments> Chief Engineer - Development Plan>Docs> Sanctioned DP2034> Development Plan 2034 (Excluded Part) EP Sheets, 8th May 2018 - For Suggestions / objections by Government SM Sheets:- MCGM Home Page (portal.mcg.gov.in)> Ward & Departments> Chief Engineer - Development Plan>Docs> Sanctioned DP2034> Development Plan 2034(sanctioned part) SM sheets, 8th May 2018</p>		

Additional Information

Water pipeline Remark: Water pipeline near the plot (14.93 meters far) has 300 mm pipe diameter.
Ground level: The plot has minimum 29.40 meters and maximum 59.00 meters ground level with reference to Town Hall Datum (THD)

RL Remark:

REGULAR LINE REMARKS (Traffic):

As far as Traffic department is concerned, there is no any proposed or sanctioned Regular Line/Road Line at present along the plot C.T.S. No.(s) 908,911,909 and 910 of Village/Division BANDRA-B in H/W ward of M.C.G.M. as shown bounded blue on accompanying plan.

You are also requested to obtain remarks from Asst. Engineer (Survey) H/W Ward. The earlier R.L. Remarks issued by this office if any shall be treated as cancelled.

The above remarks are issued without prejudice to the ownership, status of the structure, plot boundaries and will supercede to the earlier remarks and shall be valid for one year from the date of its issue.

DP 2034 Remarks

Acc: As Plan

Note: The above information is as per the data received from concerned MCGM Departments.

FIGURE 9: DP Remark

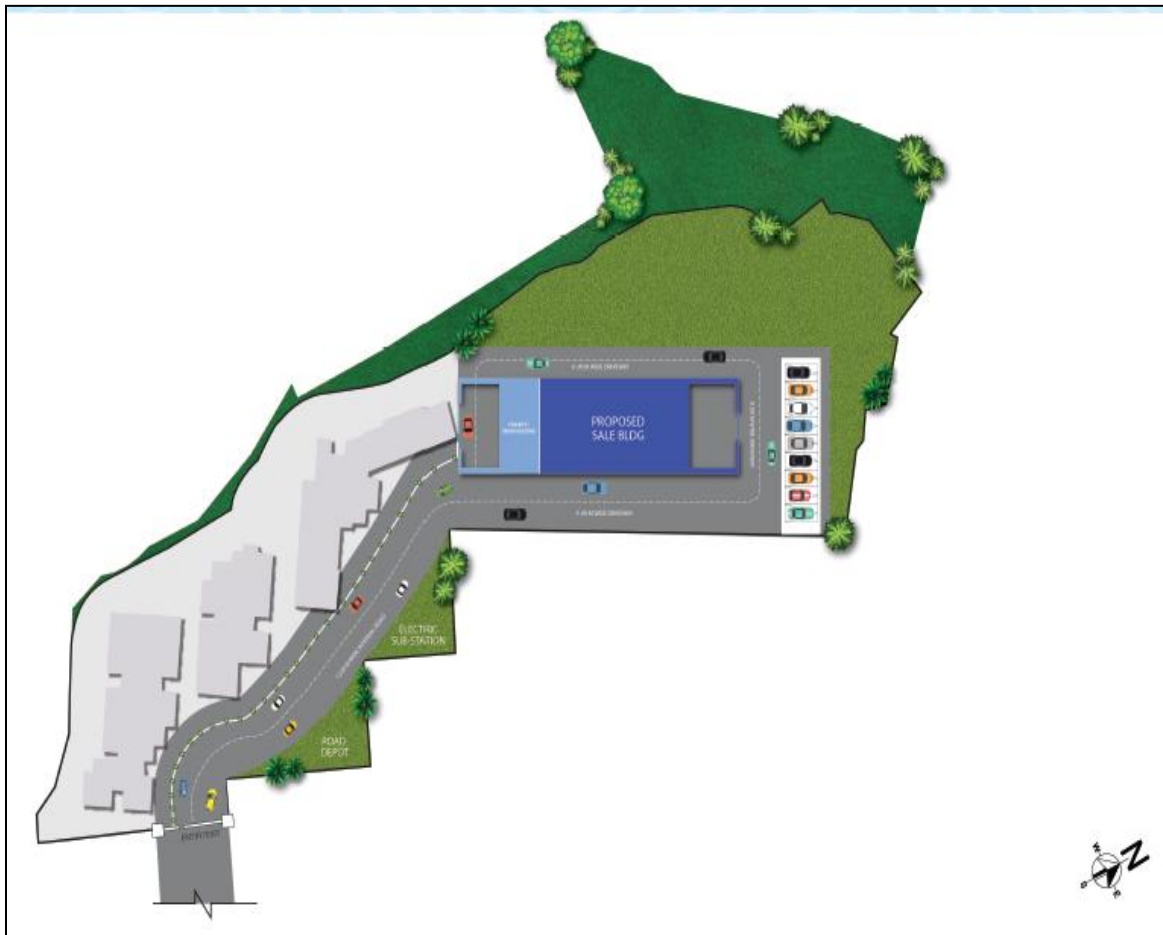


FIGURE 10: LAYOUT PLAN

TABLE 3 - TENEMENT STATEMENT

Bldg No.	Type	Res
Rehab 1	G +7 Floors	280
Rehab 2	G + 7 Floors	
Rehab 3	G + 22 Floors	
Rehab Wing A	G + 22 Floors	
Sale	G + 38 Floors	213
Total		493

TABLE 4 - AREA STATEMENT

Sr.No.	AREA STATEMENT	SQ.MTS
1	Gross Plot area	5565.00
2	Deductions	
	Garden reservation	1292.75
	Road depot	93.16
	Total deductions	1385.91
3	Net area	4179.09
4	deductions of 15% RG	Nil
3	Balance plot	4179.09
4	Add for FSI	1292.75
5	Total plot for FSI	5471.84
6	Max perm FSI	2.63
7	Max perm BUA	14636.37
8	Rehab BUA	6933.76
9	Rehab Component as per DCR 33(10)	9061.89
10	Ratio for rehab to sale	0.85
11	Sale component as per DCR 33(10)	7702.61
12	Total BUA proposed in situ	14636.37

NEED OF THE PROJECT& IMPORTANCE

The project is needed to replace the slums and with the planned development make it of an international and modern global standard.

This project will certainly be a boon to the slum removal, and housing sector that is of late developing into a buyer's market. If this trend of social significance and larger interest to the people is to be continued, then the projects like the present proposal need to be encouraged to come up fast.

Besides this, there are several socio-economic benefits of the proposed project without harming the environment or unduly straining the civic infrastructure.

Urban development and shelter in India are State subjects and the Government of India mainly lays down the policy guidelines and plays the role of a facilitator.

Shortage of developed land, inadequacy of finance for housing, dearth of cost-effective housing construction techniques and designs, menace of unauthorized constructions

Need for urban renewal and rejuvenation of slums and old structures, along with the dimensions and problems of housing, need to be seen in the overall environment of human settlements. To give effect to implementation of National agenda on human habitat, Private Sector Participation in Housing is welcome and encouraged.

The 1998 National Housing and Habitat Policy, coupled with the incentives also seek to impose a social mandate on the private sector, advising them to provide a specified percentage reservation. These units will be cross-subsidized to make them affordable to the original occupiers. They will be well integrated with the Sale units to provide for social integration within communities.

The health of the housing and construction sector is seen as a major index of the health of the economy. It is one of the largest providers of employment to the poor. The present proposal is a project under such scheme that brings benefit to resident dwellers occupying the dilapidated old building premises that are at present in much substandard, filthy and unhygienic state. It is not possible to redevelop these premises without such schemes. Public-Private partnership in

housing has led to the setting of joint ventures for land development and housing construction. There are many examples of success stories in this regard to facilitate this many steps.

INFRASTRUCTURE

Earlier the site was occupied with slums only. Currently 3 Rehab Buildings are completed.

INFRASTRUCTURE DEMAND

As to improve the aesthetics of the area, the developer has proposed to build welfare center and balwadi.

LOCATION DETAILS:

Proposed SRA project is located at Plot bearing C.T.S No. 20 (pt), 22 (pt), 23 (pt), 24 (pt), 32 (pt) & 38 (pt), Worli Division, in G/South Ward, Mumbai. Maharashtra. It is geographically on 18°59'52.71"N Latitude and 72°48'53.66"E longitude. This is 14 km from International airport, 1.6 km from Lower Parel Railway Station.

Land use pattern: The proposed project is SRA Housing Scheme for slum dwellers. The proposed land is non-agricultural land. The proposed use is residential; hence there will not be any alteration in the land use pattern.

PROPOSED INFRASTRUCTURE:

Water Requirement & Distribution

The water requirement for the proposed project will be met from the existing MCGM supply. The total water requirement for the proposed project is estimated to be about 221 KLD.

TABLE 5 - WATER DEMAND

SR.NO.	PARTICULARS	Rehab	Sale	Total
1	No. of Flats (Nos.)	280	213	493
2	Total Occupancy (Nos.)	1400	1056	2455
3	Domestic Water Requirement (KLD)	125	96	221
4	Flushing Water Requirement (KLD)	63	48	110
5	Water Requirement (KLD) From MCGM	125	96	221
6	Landscape Water Requirement (KLD)	1.5	1.5	3
7	Car Wash Water Requirement	1.25	1.25	2.5

8	Total Water requirement (KLD)	188	144	331
9	Total Sewage Generation (KLD)	169	129	298
10	Total Capacity of STP (KLD)	170	150	300
11	Treated water (KLD)	160	123	283
12	Recycled Water (KLD)	65	51	116

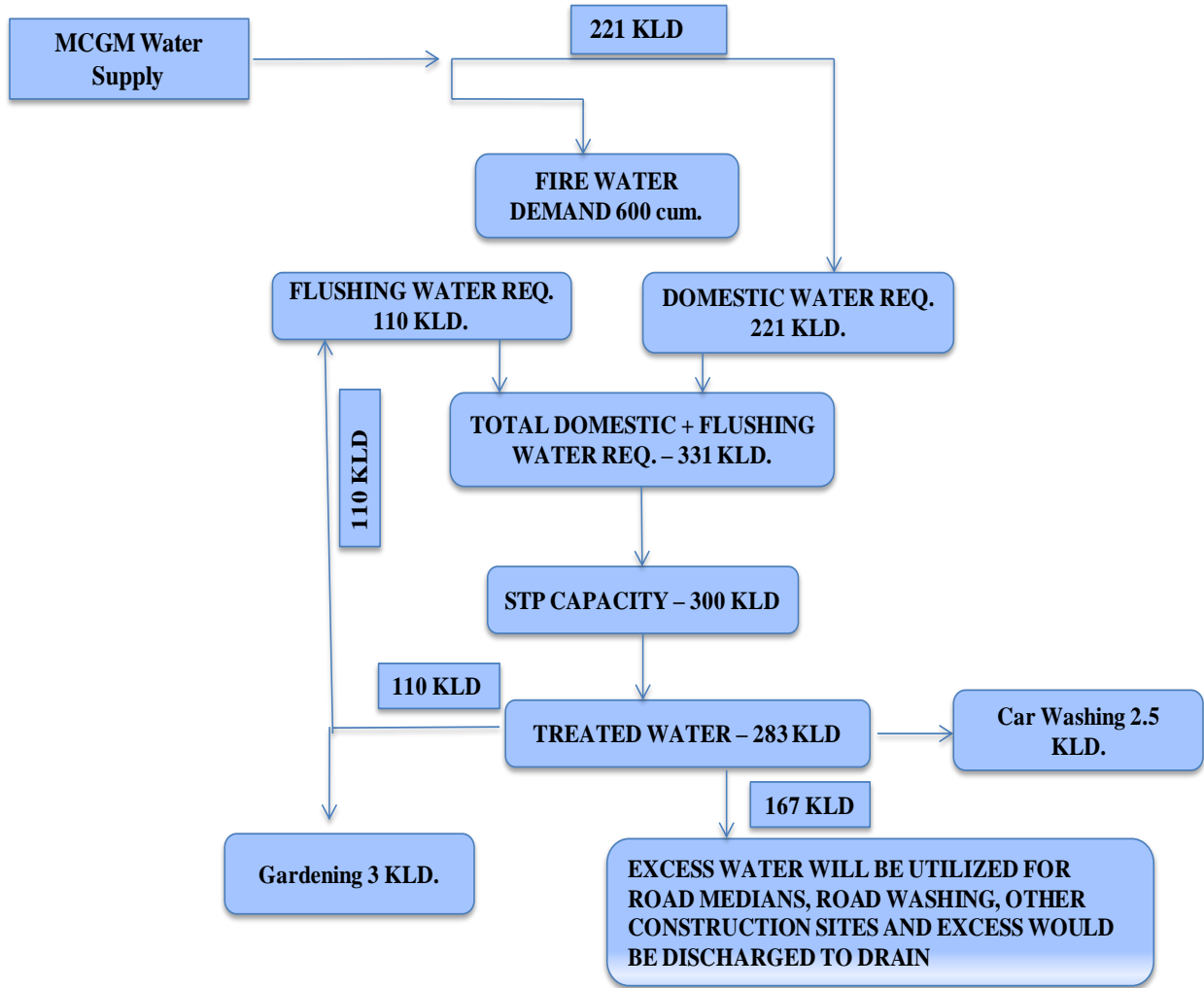


FIGURE 8: WATER BALANCE DIAGRAM FOR THE PROJECT

WATER DISTRIBUTION SCHEME

It is proposed that MCGM water as bought out water will be collected in a common sumps located at ground level. It will not need treatment since supply is of acceptable domestic water quality (IS: 10500) and pumped to another multiple overhead tanks through a network of ring mains and tapped to all consumption points of individual units. Necessary control valves shall be provided in the ducts and/or toilets for shut offs. It is proposed to use either ISI "C" Class Galvanized Iron Pipes or a Combination of PPR & HDPE pipes for distribution of domestic water.

WASTEWATER GENERATION AND TREATMENT:

Wastewater will be generated from the proposed Project. The wastewater (298 KLD) generated from Rehab & Sale Building will be treated through 300 KLD STP. Treated water can be used for landscaping & flushing purposes.

Since city sewage system is in existence in the surrounding area of the project site, the excess water from STP will be discharged into these existing sewer lines after proper permission by planning internal sewerage system in the project land.

POWER SUPPLY:

Source of Power Supply: BEST

Connected Load: 2773 KW

Maximum Load: 1473 KW

Emergency Services:

1 No. of DG Set having 500 KVA capacity for back up to emergency facility for sale and rehab buildings.

DISTRIBUTION OF POWER:

Estimated maximum demand for the proposed Project catering to various components & utilities and services etc., based on the Machinery (Lifts), equipment (domestic appliances) loads, works out to approximately 1.5 MW. The installed capacity will be approximately 10% higher than the estimated total demand. The above projected power demand includes total power needs of Machine, lighting, utility, external lighting and common area lighting loads.

Earthing and Lightning Protection

Safety Earthing System: A main earth grid will be buried on the periphery of the buildings with sub grids provided for each of the zones and rated to carry short circuit current for 1.0 sec.

Lightning Protection System: Lightning protection will be established as per the guidelines in IS-2309. Lightning protection system will be provided with 25x3 mm GI strips laid on the periphery of building roofs with down conductors, earth pits conforming to IS. Each down conductor will be provided with a test link and connected to an earth electrode; each earth electrode will have provision for isolation and testing.

Solar Energy Conservation System:

In order to reduce Electricity consumption and encourage energy conservation, it is proposed to consider an on-site solar harvesting system to the extent of not more than 2.5% of the estimated common services electrical load.

Vehicular Parking Area

This being an SRA scheme and very low income group there is hardly any possibility of privately owned vehicles belonging to the residents hence no special parking arrangements considered beyond the DC rules in this regards. Covered parking will be available for Sale Tenements, which will be sufficient to take care of the need. Parking provided is 213.

Fire Fighting System

The detailed fire protection system is being planned in the project. This system shall be implemented in line with the requirements of the Chief Fire Officer (CFO) of Fire Safety Department, MCGM. A separate permission will be taken from CFO for the provisions made to the complex for the purpose of fire safety. Some of the provisions like underground and overhead water tanks, automatic fire and booster pumps, wet risers, landing hydrant valves, yard hydrant with stand post, sprinklers, portable fire extinguishers etc shall be implemented. The provision of detection system complete with intelligent, addressable smoke and heat detectors, fire alarm system, refuge area, manual call points, control panel, public address system and alarm hooters shall also be implemented.

Amenities:

The proposed project will have amenities which includes provision of Balwadi, Welfare centre, Society Offices, etc. as per DP of the area

Storm Water-Collection and Disposal

Storm water drains will be constructed according to municipal regulations. Storm water from the entire plot will be collected through network of storm drains. Storm water from plot area will be collected in the rainwater harvesting tanks provided. The overflow from these tanks, if any, will be then discharged in the municipal storm water drains.

RAIN WATER HARVESTING SYSTEM

Rainwater harvesting is proposed in the project to conserve the rain water. The Rain Water Harvesting System consists of Storage Tanks in which rain water harvested will be collected from terrace area of the buildings. The overflow from this storage tanks will be transferred to the recharge pits for ground water recharge. Adequate care will be taken while making efficient planning for percolation of rainwater into the sub-surface without directly draining it outside the Project and conserving maximum extent of rainwater within the facility. In order to allow percolation of rainwater into the ground, rainwater-harvesting structures along the boundary of the Project has been proposed. These will enhance the groundwater storage potential thus raising the water tables in the area. The rain water collected from paved area, Road & Open area will be diverted to recharge pits.

SOLID WASTE MANAGEMENT

Mainly, solid waste generated from the Project is due to consumption of food materials, plastic, packing material and paper. Since the project site has not yet been cleared, presently there is no Demolition material produced. Mostly the slum hutments are constructed in Asbestos Cement Sheets and partly with Brick masonry in Mud mortar or low percentage cement mortar. Most of the material salvaged during demolition will be in the form of scrap and remaining debris of brick and other similar construction materials will be used to fill up the site area as it is low - lying area.

SOLID WASTE GENERATION FROM THE PROJECT

Sr. No.	PARTICULARS	TOTAL (T/Day)
1	Biodegradable waste (T/Day)	0.67
2.	Non – Biodegradable waste (T/Day)	0.55
3.	Garden Waste (T/Day)	0.0066
4.	Total Solid Waste (T/Day)	1.22
5.	Sewage Sludge (T/Day)	0.05

Solid waste would be generated as above. The bio-degradable waste will be composted using OWC and non-biodegradable waste will be handed over to the garbage collecting vehicles of the MCGM. The sewage sludge generated from the STP will be used as manure for plants.

LANDSCAPING AND GREENBELT DEVELOPMENT

Adequate land will be available for Recreational purpose. 8% area of the net plot is allotted for development of recreational garden, the area of which is 445.2 Sq.m. in the proposed development. Suitable plant species of local varieties will be planted with adequate spacing and density for their fast growth and survival.

FLOOR	R.G AREA (Sq.m)
Total RG	445.2

FIGURE 16: LANDSCAPE PLAN

S.N.	METHOD ADOPTED	SETTING-UP COST (IN LAKHS)	ANNUAL MAINTENANCE AND OPERATIONAL COST (IN LAKHS)
1	Rain Water Harvesting	14	2
2	MSW	22	3
3.	STP	120	5
4.	Solar Energy System	23	3
5.	Landscaping	8	1
Total		187	14

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: it;

- 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. Landslide hazards are also not considered for this project as the site also not located at foothills of any major elevation.

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, equipment's 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
- Intentional
- 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 raising 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.
- Impart elementary firefighting training to occupants.
- Emergency organization must be setup.
- Don't dispose off 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, Mumbai region falls under Seismic Zone-3. There have been claims that Mumbai is prone to moderate intensity earthquakes ranging up to about 6.5 on the Richter scale. Mumbai 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 Mumbai 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.

The proposed project is located in the plateau area in Mumbai suburb and the elevation of the land on which the project is located is 83 feet above the MSL. 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 residents 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 suburban area of Mumbai City 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 Mumbai 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.

6.4 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]

Table 6.4: 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 Mumbai. 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 Transformers	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 Mumbai 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, water and sewage lines. It may also damage the external envelop and may cause the building to collapse.	Low: Mumbai lies in Seismic Zone III which is one of the least vulnerable zones. Mumbai does not have history of earthquakes. Mumbai lies on west coast 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: Mumbai city 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

<p>Other</p>	<p>Power failure, Water unavailability, Road congestion, Communication failure</p>	<p>Low: Such types of risks are rarely created in Mumbai 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</p> <p>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.</p>
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DISASTER PREPAREDNESS

6.5 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 checkup would be carried out by registered engineers of BMC.

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.

6.6 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.

6.7 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 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). Firefighting 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 neighbours. 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.

Consultation of the Project

- The proposed residential building will be coming up at Mount Mary Bandra, Mumbai.
- The proponents are following all Firefighting safety rules and regulations as prescribed by M.C.G.M. and CFO.
- The proposed building will be designed to meet requirements of seismic zone III.
- Domestic sewage will be treated in full-fledged Sewage Treatment Plant.
- Rain water storage arrangement will be provided.
- Ambient Air Quality of the project site will be within the permissible limit as prescribed by National Ambient Air Quality Standards.
- Solid waste will be collected and kept separately for biodegradable and non-biodegradable garbage. Segregated garbage will be handed over to M.C.G.M.
- Sludge that will be generated from the Sewage Treatment Plant will be used as manure.
- Noise is expected to be marginally on higher side during construction phase. In the operational phase it will be mainly due to the vehicular movement but will be maintained within the prescribed limits.
- No significant impact is seen on flora and fauna.
- Fly-ash will be used in concrete work.

- The project will generate employment opportunities during construction stage and also during operational phase. The standard of living of local people due to employment is likely to improve, so we may say that it is positive socio-economic impact.
- We are rehabilitating 271 families, i.e. over 1355 people with safe, hygienic, sanitary homes of 300 sq.ft. CA.
- Development of Public garden adm. 1292.75 Sq.m is proposed as per regulation.
- STP, OWC, RWH, Solar , LED Lights and several other enviro friendly features are incorporated in scheme.
- Proper development of Infrastructure (Sewer Line, SWD etc)