

Mumbai the capital of Maharashtra is also the financial capital and the most populated city of India. Mumbai has grown in recent decades for many residential and commercial developments. Diminishing of Industrial zones and development of corporate offices, mall culture in very short period is one of the features of today's Mumbai.

The Mumbai has many old, dilapidated structures. They are very unsafe to retain. Many of them are in CRZ zones. Development of those by rehabilitant those tenants along with development of new flats to compensate the development charges will not be possible if extra FSI is not used. Because of CRZ conditions the FSI restriction makes those structures unattended.

But because of New CRZ notification 2011, it is possible to compensate development charges by developing these structures. The one of such project of unsafe, dilapidated building of residential use as declared dilapidated structure by office of K/West Ward is discussed here.

## **1. INTRODUCTION TO THE REPORT**

Proposed redevelopment of plot bearing C.T.S. No. 1013 of Village Juhu, at TPS II of Santacruz, Pandya Lane No. 2, Santacruz (W), Mumbai and thereby obtain Environmental Clearance as per clause 33(6) of DCR – 1991 in force as on 6<sup>th</sup> January 2011. The scheme for the same is approved by MCGM under DCR 33(6). The Plot is occupied by existing Ground + 2 upper floors structure occupying 10 existing tenants/ occupants. The structure was declared as dangerous by the office of Assistant Engineer (B & F) K/ West Ward vide their notice under section 354 of MMC Act on 10/02/2010. As per MoEF Notification dated 6/1/2011, redevelopment of dilapidated, CESSSED and unsafe buildings in CRZ areas are permitted with special advantages, in which the project is planned as per DCR's in force as on 6/1/2011 and staircase/ lobby/ lift area is claimed free of FSI, as per clause 35(2)c of DCR 1991. The proposal is submitted for prior CRZ clearance, as per the

requirement of amended CRZ notification-2011 and the check list finalised by MCZMA vide Office Memorandum dated 02/07/2011.

Current development thus will help the existing tenants/ occupants to get permanent, safe structure. They were residing in unsafe building. Photos of the same are attached in annexure.

These old dilapidated structure is now proposed to be developed into one building, comprising of stilt + 16 upper floors for residential use including refuge area and car parking.

## **2. DESCRIPTION OF THE PROJECT**

### **2.1 NATURE OF THE PROJECT**

This is a proposal for development of residential building situated at C.T.S. No. 1013 of Village Juhu, at TPS II of Santacruz, Pandya Lane No. 2, Santacruz (W), Mumbai in CRZ-II belt, as the same is situated within 500 mtr. from Arabian Sea. (Approx distance 320 m). The proposal is for redevelopment of dilapidated residential building, which is situated on the landward side of **existing Juhu Tara Road in existence prior to 19/2/1991, as may be seen from CZMP of Mumbai as well as old 1967 DP of Mumbai.**

The Plot is situated in Residential zone and not under any reservation as per 1967 DP as well as Revised 1993 DP. The FSI permitted on the plot under reference is 1.00 captive + 1.00 TDR use = 2.00. In the instant case, the subject plot has the structure, which is dilapidated prior to 6<sup>th</sup> Jan 2011, as declared by MCGM. Therefore, this plot will be allowed benefits of DCRs as in force as on 6<sup>th</sup> Jan 2011, in view of clause 8 V (c) of CRZ-2011.

## **2.2 SIZE OF THE PROJECT**

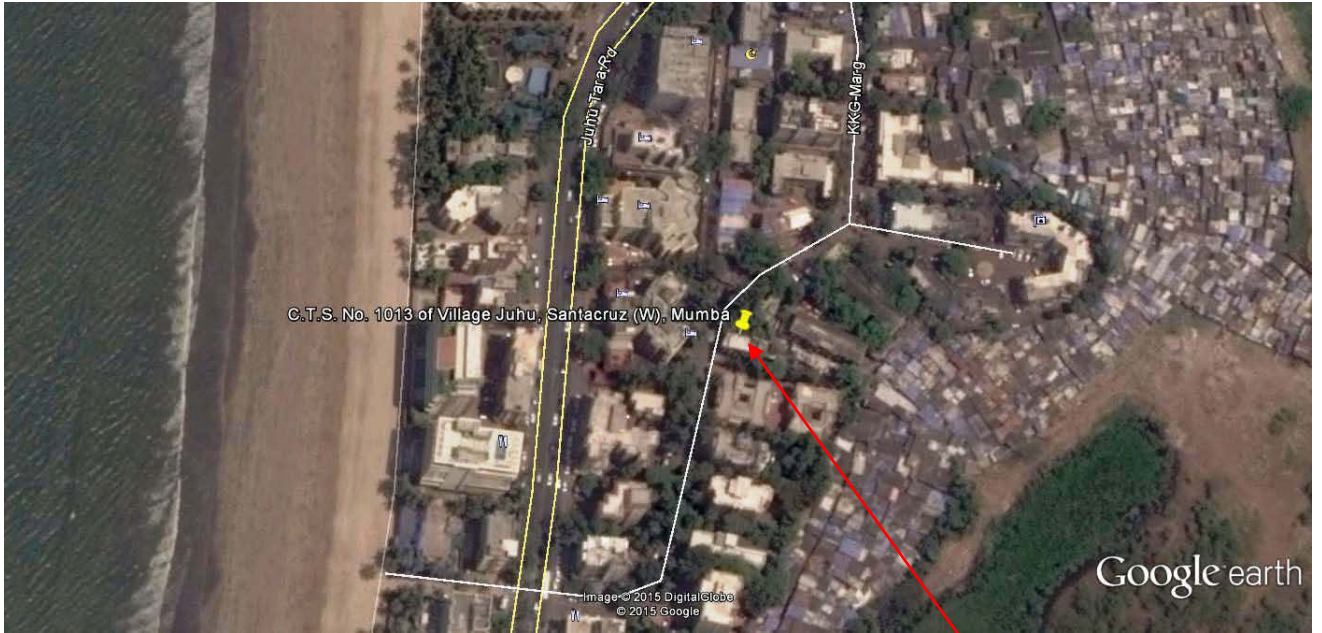
Area of the plot is **534.00** sq mtr. Cost of the Project is Rs. **15,99,00,000/-** ( Rupees Fifteen Crore Ninety Nine Lakh Only exclusive of land cost)

## **2.3 LOCATION**

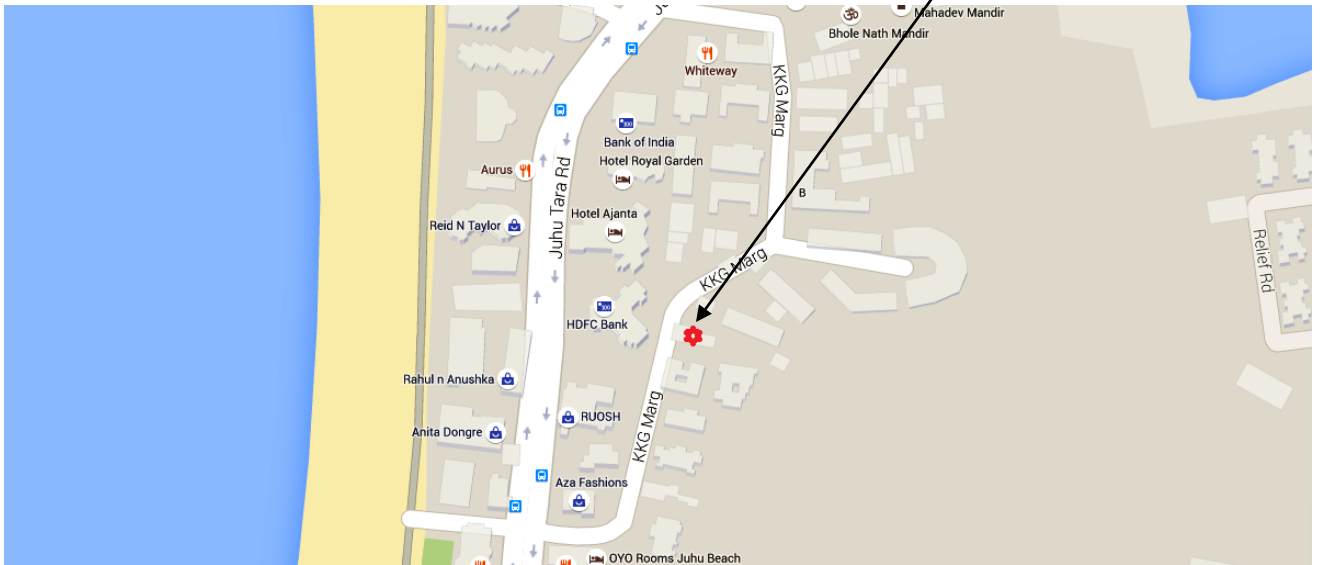
The C.T.S. No. 1013 of Village Juhu, at TPS II of Santacruz, Pandya Lane No. 2, Santacruz (W), Mumbai, is in the suburban part of the Mumbai city.

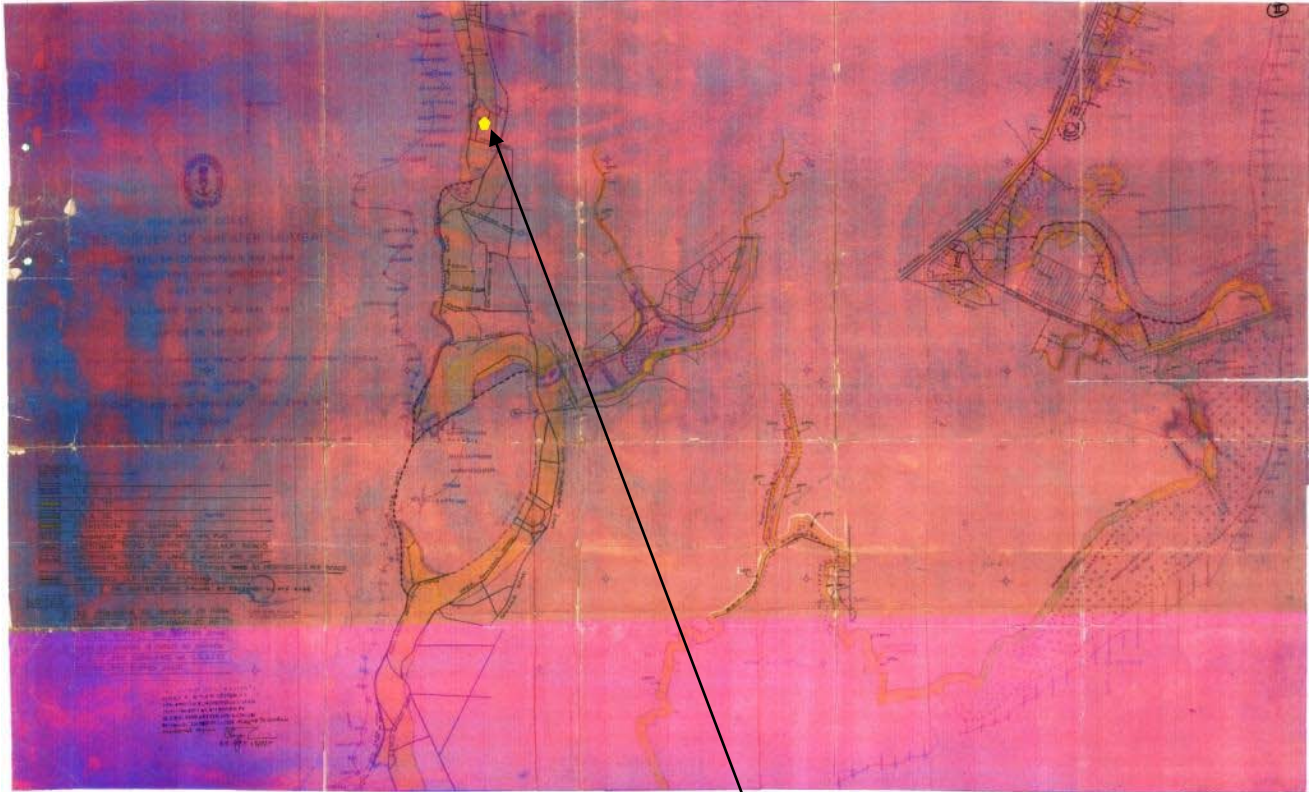
The nearest station is Santacruz Railway Station which is about 4.00 km away from the site. The nearest bus stop is Juhu Tara Bus Stop, which is 170 meters away from the site. The Juhu Airport is about 1.8 km from the site under reference.

Google Earth Image of the site



SITE UNDER REFERENCE





SITE UNDER REFERENCE

CZMP Plan showing location of reference Plot

## 2.4 SITE DESCRIPTION

The site under reference is affected by CRZ-II zone and the property fall landward side of the existing Juhu Tara Road which is reflected in CZMP plan. Thus property attracts the CRZ legislation as per CRZ 2011.

The development site does not fall or contain the environmentally sensitive areas as specified in the coastal Regulation zone notification. Total plot Area in CRZ is 534.00 sq. mtrs. and the same area will be used for construction activity.

Town / Tehsil	: Mumbai
District	: Greater Mumbai
State	: Maharashtra
Latitude	: 19° 5'26.44"N
Longitude	: 72°49'41.82"E

## 2.5 PROPOSED DEVELOPMENT

### 2.5.1 AREA

1.	Area of Plot	534.00 Sq mtrs
2.	Deductions for	
	a) Road set back area	0.00 Sq mtrs
	b) Proposed Area	0.00 Sq mtrs
	d)Any Reservations	0.00 Sq mtrs
	Total (a+b+c)	0.00 Sq mtrs



3.	Net area of plot (3-4)	534.00 Sq mtrs
4.	Deduction for 15% Recreation ground on Balance Plot Area	0.00 Sq mtrs
5.	Balance area of plot (1-2)	534.00 Sq mtrs
6.	Additions for F.S.I purpose	
	2(a )100% set back	0.00 Sq mtrs
	2(b) 100% Proposed Road	0.00 Sq mtrs
7.	Total area ( 5+6 )	534.00 Sq mtrs
8.	F.S.I Permissible	2.00
9.	Addition for 100% T.D.R	534.00 Sq mtrs
10.	Permissible floor area (7 x 8)	1068.00 Sq mtrs
11.	Existing BUA	
12.	Proposed Built up Area	884.70 Sq mtrs
13.	Excess balcony area taken into F.S.I	127.20 Sq mtrs
14.	Excess refuge area	51.80 Sq mtrs
15.	Total built up area proposed	1063.70 Sq mtrs
16.	F.S.I. consumed (15/7)	1.99
<b><u>Parking Statement</u></b>		
	Required Parking	29 Nos.
	Provided Parking	29 Nos.
	Building Structure	Ground Floor + 1st to 16 <sup>th</sup> Upper Floor
	Height of Building	53.05 Meters

**PROJECT DEVELOPMENT DETAILS**

Proposed development		
1	Existing Structure	Ground Floor + 1 <sup>st</sup> to 2 <sup>nd</sup> upper floors
2	Structure of Building	Stilt + 16 upper floors including refuge area.
3	Tenements existing	10 nos.
4	Tenements proposed	16 nos. ( Sale and Rehab)
5	Height of Building from Ground level	53.05 mtr
6	Parking required as per MCGM	29 nos.
7	Parking provided	28 nos.
8	Emergency Power supply (D.G. Nos. x KVa	1 no. 35 KVa
9	Area required for D.G sets	5 sq. mt
10	Salient features of the project	
	<ul style="list-style-type: none"> <li>• Earthquake Resistance Building structure</li> <li>• Rain water Harvesting System in the complex</li> <li>• Energy Conservation; Provision of Solar water heating system.</li> <li>• Eco-Friendly Measures</li> <li>• Optimum use of Timber</li> </ul>	



## 2.5.2 UTILITIES

The Utilities required during the construction phase are water, power, fuel and Labour.

i) **WATER :** (Expected Consumption – total 35 cum/day)

For Construction activities: 30 cum/day & For Domestic use: 5 cum/day

<b>Water Balance (Construction Phase)</b>				
<b>Sr. No.</b>	<b>Consumption</b>	<b>Input m<sup>3</sup>/Day</b>	<b>Loss m<sup>3</sup>/Day</b>	<b>Effluent m<sup>3</sup>/Day</b>
1.	Construction Activities	30	30 (Tanker consumption)	Nil
2.	Domestic (50 Site Workers)	5	1	4
<b>Total</b>		<b>35</b>	<b>31</b>	<b>4</b>

**Water Balance (Operation Phase)**

Sr. No.	Component/ Head	Occupants	Water Requirement		Remarks
			Domestic	Flushing	
1	Total residential population	112	10.08	5.04	@ 90/45 lpcd
2	Total floating population*	23	0.46	0.575	@ 20/25 lpcd
4	Car washing	28	0.28 CMD		28 cars (@10L per car)
5	Total Quantity of Water Required	16.435 CMD			For a total population of 135 person.
6	Total Waste Water generation (Grey Water Generation)	8.31 CMD			8.29 CMD to grey water Treatment plant (capacity 11 CMD) after 1.5% evaporation losses
7	Sludge generated	0.17 CMD			-
8	GWTP treated recycled water	8.29 CMD			-

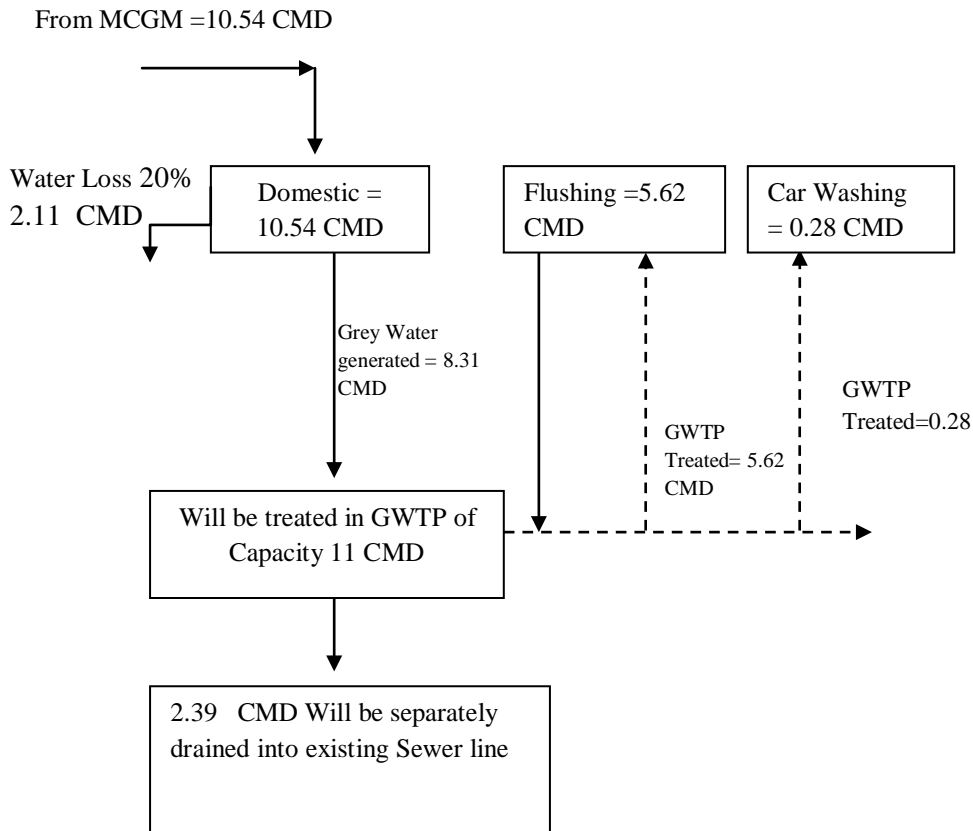
\* - Floating population consists of drivers, servants, security personnel, etc.

1] Source: - Water will be available from Mumbai (MCGM) for domestic use and from Tanker for construction purpose

2] Storage: - Water for construction will be stored in open tank.

Drinking water will be stored in HDPE tank.

## Water Balance per Day Basis



### ii) POWER

#### DURING CONSTRUCTION

(Expected Consumption- about 0.3 MW)

1] An Electricity supply of 0.3 MW will be available from BEST. It is mainly required for some construction equipments, general lighting etc.

2] All Fire & Safety measures will be taken as appropriate and will be supervised by the Authority.

**DURING OPERATION**

Total Energy consumption: 0.20 MW

The electricity supply will be available from BEST/ TATA Undertaking.

**iii) FUEL****DURING CONSTRUCTION PHASE**

Diesel (5 L/day during excavation & 10 L/day post excavation).

All the equipment are electrically driven except JCB, poclain, and concrete mixers.

**DURING OPERATION PHASE**

Diesel will be required to run the D. G. Set in case of power failure. Hence the quantity of diesel consumed will vary depending upon the usage of D. G set.

1. Storage: Diesel and oil will be stored in drums / tins with proper identification mark/labels in identified areas only.
2. Fire and safety measures will be taken as per the guidelines from concerned authority.
3. All Safety and fire precautions will be followed.

**iv) MANPOWER****DURING CONSTRUCTION PHASE**

(Expected Manpower – about 50)

Approximately 50 persons will be working during the peak time of construction phase. These persons will be on the project site during 0900 hrs. Except Security Personnel, who will be on the field round the clock for twenty – four hours.

## DURING OPERATION PHASE

### POPULATION

There will be about 112 persons residing in the building, out of these, 23 will be non residential staff including drivers, security.

### 3. CONSTRUCTION PHASE

The type of Construction Materials, Equipments used during the construction phase and persons involved in various activities on the field affect the status of environment to a great extent. The impact of construction Activities on various components of environment on the on the project site and surrounding area is predicated in this section.

#### 3.1 LIST OF MATERIALS

The Construction material required for the proposed redevelopment is given below.

Sr. No.	Item	Unit	Quantity	Source	Process
1.	Sand	CUM	663	River bed	Nil
2.	Aggregate	CUM	1474	Quarry	Crushing
3.	Standard Bricks	Nos.	534	Red Soil	Heating, Moulding
4.	Timber	M.T	24	Forest	Cutting & Trimming
5.	Construction Waste	Kg/Day	45	-	-

The basic engineering materials like aggregate, cement, sand and bricks/blocks will be purchased locally. However, finishing materials will be purchased keeping in mind the energy conservation aspect.

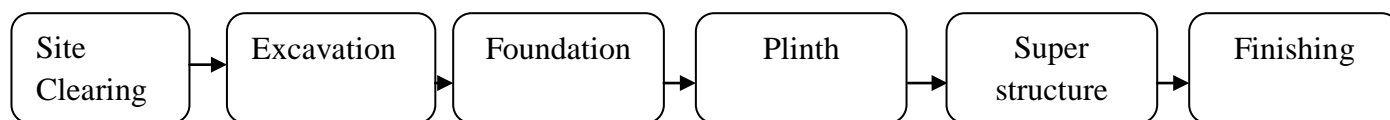
### 3.2 LIST OF EQUIPMENTS

The construction equipments required for the residential building is given below.

Sr. No.	Equipments	Numbers	Operation	Duration
1.	JCB, Poclain	1	Diesel	Short
2.	Dumpers	2	Diesel	Short
3.	Goods lifts / Personal lifts	1	Electric	Total
4.	Vibrators	4	Electric	Total
5.	Dewatering Pumps	1	Electric	Total
6.	Concrete Mixers	1	Electric	Total
7.	Wood Cutting Machine	1	Electric	Total
8.	Drill Machine	1	Electric	Total

### 3.3 CONSTRUCTION PROCEDURES

The outline of the construction procedure is described below schematically.



**Note:**

1] The project is expected to be completed within three years (Maximum) period.

Construction Parameters and Quality will be strictly adhered to as per the approved architectural design data/map. All the regulations of government authorities will be followed.

- 2] All the safely precaution will be observed as per the guidelines during the construction phase. Personal Protective Equipments (PPE) will be provided to all the personnel involved in the construction activities.
- 3] Site barricading by corrugated tin sheets up to height of 5.0 mtr will be done to protect the surrounding area of the project site from nuisance /dusting.
- 4] All electrical connections & cables will be checked by authorized persons to ensure the safety of workers on field.
- 5] Water sprinkling will be done, wherever required to reduce the dusting in atmosphere. Jute barricading along building / plot boundary shall be provided to minimize noise level from construction activities.
- 6] The safety and security officers shall supervise the site.
- 7] Safety helmets will be mandatory to all the persons present on the site during the construction activities.
- 8] Hand gloves and dust masks will be provided to persons handing construction materials during the operation.
- 9] Safety belts will be provided to the persons working at height during the operation.
- 10] Safety nets will be arranged at a height at about 5.0mtr.when the structures get raised above the required height from the ground.



#### **4. ENVIRONMENTAL CONCERNS**

##### **4.1 AIR POLLUTION**

1] Source: - The source of Air Emissions is from the use of some equipment like concrete pumps, mixers, etc. These equipments consume Diesel as fuel during their operation. Carbon Monoxide, Hydrocarbons, Oxides of Nitrogen and Particulate Matter etc. will be the major pollutants.

Fugitive Emissions i.e. Emissions from construction activities will mainly consist of dust. Movement of Heavy & light vehicles, for loading and unloading of Construction Materials, transporting people, will also add on to source of emissions.

Parameter	Permissible Range	CPCB Limits	AVG Range Before Activity	During Activity
SPM ( $\mu\text{g}/\text{m}^3$ )	100 ~ 200	200	80-100	150-200
RSPM ( $\mu\text{g}/\text{m}^3$ )	50 ~ 100	100	20-30	50-100
SO <sub>2</sub> ( $\mu\text{g}/\text{m}^3$ )	50 ~ 80	80	10-15	10-15
NO <sub>x</sub> ( $\mu\text{g}/\text{m}^3$ )	40 ~ 80	80	5-10	5-10

Ref : 24 Hourly values as per Central Pollution Control Board, National Ambient Air Quality

Monitoring, Notification 11<sup>th</sup> April, 1994, Schedule 1.

## 4.2 AIR POLLUTION MITIGATION

Sr. No.	Source	Mitigation	
1.	Vehicle	i]	All the vehicles coming to the site will be ensured to be in good condition having PUC.
		ii]	Public awareness to use Green Fuel will be done.
2.	Solid Waste	i]	Proper segregation and collection of waste will be ensured.
		ii]	Location of loading and unloading will be fixed.
		iii]	Good Housekeeping practices will be ensured at the premises.
3.	Construction Activities	i]	Noise / Dust nuisance preventions by barricading site up to 5.0 meter height by GI Sheets
		ii]	Water sprinkling on dry site, sand.
		iii]	Maximum use of electrical driven construction equipments with regular maintenance.

## 4.3 WATER POLLUTION

1] **Use** : - The MCGM water will be used for domestic purpose i.e. drinking water for staff and laborers working on the field whereas bore well water/Tanker water will be used for various constructions activities like, Concreting, Plastering , Flooring & Finishing etc.

2] **Effluent** : - There will be no generation of effluent from construction activities as the water used for concreting; Plastering, Flooring and Finishing etc. will get evaporated during drying or curing

time. All the construction activities are physical in nature. The Domestic Effluent will be generated due to the persons working on the site who will require water for drinking, cleaning, bathing etc.

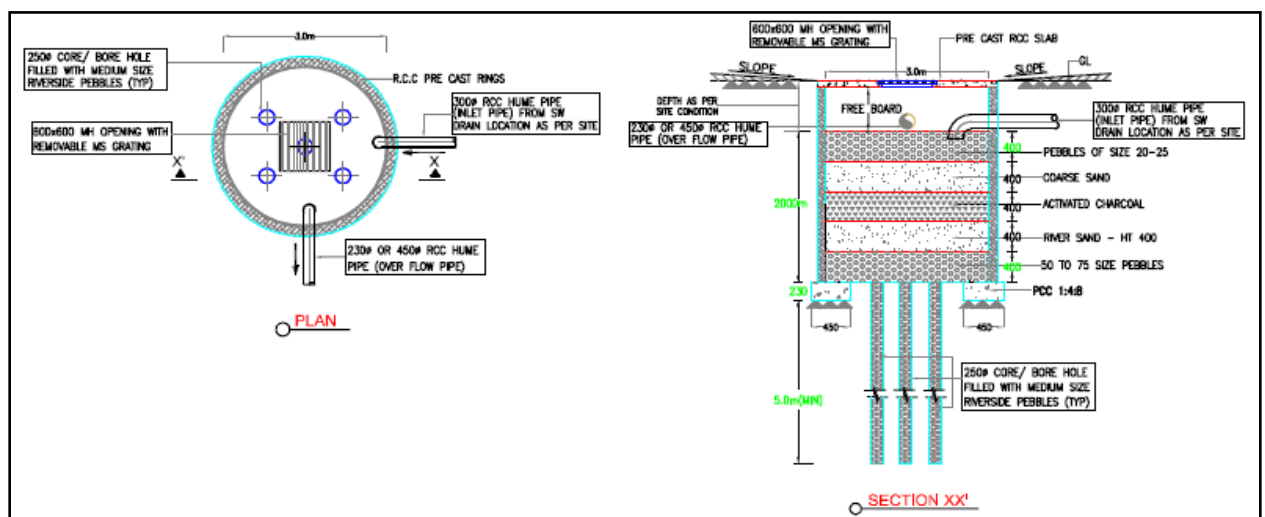
Grey Water generated during operation phase will amount to 8.31 CMD which will be treated in the Grey Water Treatment Plant. The treated water will be used for non domestic purposes such as gardening, car washing, flushing etc.

3] **Treatment & Disposal** :-The Domestic Effluent generated in construction phase will be disposed off in existing MCGM Sewer.

4] **Rain Water Harvesting** : The plot is already covered with dilapidated Ground floor + 2 upper floor structure and same will be developed in Ground + 1<sup>st</sup> to 16<sup>th</sup> Upper Floor for Residential Building. The plot area is 543.00 sq mtrs, which is very small. Hence roof rain water harvesting is proposed in the project. The permeable paver blocks are proposed along with 1 Recharge pit to increase the percolation of rain water into the soil rather than flowing to the drain.

\* (AS PER MOEF GUIDELINES)

- **Percolation Pits: 1 no. (0.5 \* 0.5 \* 2m)**



**5] Storm Water Discharge:**

Storm water drains will be constructed for proposed facility as per the norms. The recharge pits and Rain water recharge pits will help to reduce the run off and reduce the load on external storm water drain.

**4.4 NOISE POLLUTION**

Location	Range    dB (A)
	Day Time
National Ambient Air Quality Standards (For Residential Zone)	55

#### 4.5 NOISE LEVEL MITIGATION

Sr. No.	Source	Mitigation
1.	Near Residential Areas	i] Site Barricading by corrugated tin sheets will be done to protect the surrounding area. ii) Construction Activity will be carried out during daytime only.
2.	Nearby Traffic	i] All the vehicles coming to the site will be ensured in good condition, having Pollution Under Check (PUC). ii] Smooth Roads will be maintained in a project site.
3.	Construction Equipments	i] All the equipments will be run during daytime only. ii] Lubricants will be applied to all the equipments at proper interval. Iii] Acoustic Enclosure will be provided for all the Equipments

2] It is evident from the nature of operation (i.e. construction) that the Concentration of suspended particulate matter would be higher than the other two parameters.

3] Control of Emission: - Proper precaution will be taken to reduce the particulate matter by water sprinkling on the dry site area, barricading the periphery by corrugated tin Sheets of 5.0 mtrs height to protect the surrounding area from dusting. The pollution generated will be controlled by, allowing vehicles that will comply to mass Emission Standard (Bharat Stage –II) stipulated by Central Pollution Control Board (CPCB)–Ministry of Environment & forest (MoEF), New Delhi. Also it will

be ensured that the vehicles will carry PUC certificate. To minimize air pollution efforts shall be made by use of equipments, which are electric power driven.

#### **4.6 SOLID WASTE**

1] Normal debris, waste concrete, soil, broken bricks, waste plasters etc. will be collected properly and will be reused for land filling in the premises.

2] Total solid waste (Quantity about 67.50 kg per day) and organic waste (20.79 Kg/ day) will be segregated properly and stored in separate bins and will be disposed off as per MCGM rules.

3] Metallic Waste and paper waste will be collected separately and will be salvaged or recycled or sold to authorized recyclers.

### **5. PROJECT SCHEDULE AND COST ESTIMATES**

The Proposed Project is Redevelopment project and will be started as soon as all government NOC's and CRZ Clearance is received to start the work. The projected Date of Start is June 2016 while the Date of completion will be Jan 2019 if everything went as per planning.

### **6. TRAFFIC MANAGEMENT**

#### **6.1 CONSTRUCTION PHASE**

- Storage and Godown area will be properly identified.
- There will be about adequate wider space for movements of vehicles and parking.
- The area for loading and unloading will be located at proper demarcated location in the premises.
- Thus the traffic management on the project site will be easily and smoothly monitored without any hindrance to the regular flow of traffic on the main road.

## **6.2 OPERATIONAL PHASE**

- About 28 cars per day are expected to be accommodated in the premises. The parking space will be provided in basement and under stilt / parking floors. There is ample car parking space in the building on all sides; there will be smooth movements of cars.
- There will be 6.0 mtrs wide approach road to the building from municipal road for movements of vehicles and parking.
- Traffic Management Plan system will be approved from concern MCGM Authority.
- Thus the traffic management will be easily and smoothly monitored without any hindrance to the regular flow of traffic on the main road.

## **7. ENVIRONMENTAL, HEALTH AND SAFETY**

All the safety and security measures shall be observed at constructions site. Safety precautions will be observed as per the guidelines during the construction phase. Personal Protective Equipments (PPE) will be provided to all the personnel involved in the construction activities. The project authorities will ensure use of safety equipments for workers during execution process. The safety and security officers shall supervise the site. Proper training will be given to workers and authorities to handle the hazard situation.

### **7.1 SAFETY MEASURES ON SITE**

- 1] Parameters and Quality will be strictly adhered to as per the approved architectural design data/map. All the regulations of government authorities will be followed.
- 2] All the safely precaution will be observed as per the guidelines during the construction phase. Personal Protective Equipments (PPE) will be provided to all the personnel involved in the construction activities.

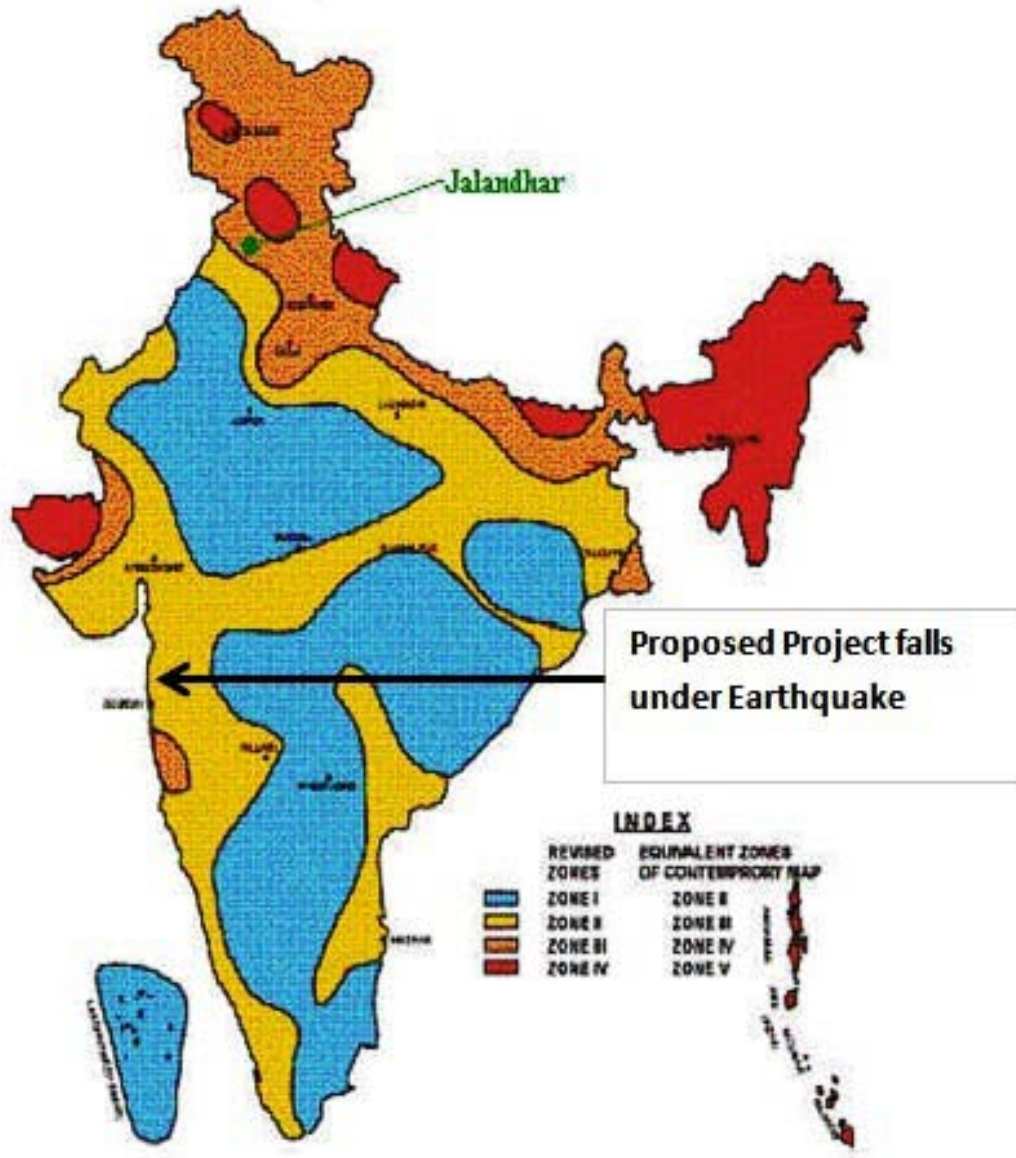


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- 10] Safety nets will be arranged at a height at about 5.0 mtrs when the structures get raised above the required height from the ground.

## **8. BENEFITS OF THE PROJECT**

- The proposed redevelopment will initiate redevelopment of surrounding old building.
- The surrounding area will also be developed from residential point of view.
- It will provide employment opportunities to the local people in terms of labour during construction and services personnel during operational phase.
- Modern sanitation and infrastructure facilities will have minimal impact on living condition of local people.
- The project will improve living standard and welfare of the area and local people.

**SEISMIC ZONE MAP OF INDIA**



**SITE PHOTOGRAPHS**