

EXECUTIVE SUMMARY

**REDEVELOPMENT OF RESIDENTIAL CUM
COMMERCIAL PROJECT**

AT

**C.S. NO 1/47, 2/47, 117, 118, 119, 120 AND 121
OF LOWER PAREL DIVISION, SITUATED IN
G/SOUTH WARD, MUMBAI**

BY

M/S NISHUVI CORPORATION

1. INTRODUCTION TO PROJECT

After recognizing the need of development of plot bearing C.S. No 1/47, 2/47, 117, 118, 119, 120 and 121 of Lower Parel Division, situated in G/South Ward, Mumbai, having total 145 nos. of tenants were residing at very old building structure is now being developed by M/s Nishuvi Corporation, out of which only 134 tenants/occupants have either executed consent terms/permanent alternate accommodation agreements. The developer of the plot is going to develop residential building of Wing A, B, C, E & F.

There exists CESSSED category nine ground storey structures (Chawls) on the plot. The existing CESSSED category structures are of Ground Floor with total 145 nos. of Residential tenants having 2967.42 sq. mtrs of built up area. The land use of the Existing plot is residential and non residential as per certified tenant list by Deputy Engineer, GN, B.B.R. & R.B. Board, Bombay, dated 16/03/2004 and inspection extract of MCGM and CESSSED category certificate for the property situated in the Residential zone. MHADA has awarded revised NOC for redevelopment of the said property with 2.5 FSI or FSI required for the rehabilitation of existing occupiers plus 50% incentive, whichever is higher; dated 25/07/2014 for the CESSSED Category Buildings. The CESSSED category structures are affected by CRZ II area.

The proposal was earlier placed before the MCZMA in 38th MCZMA meeting, dated 06/03/2007, for a single building of Ground floor (stilt floor) + 1st to 5th upper residential floor, which was then forwarded to MoEF & CC vide letter No. MCZMA/15 dated 28.03.2007. The MoEF & CC vide letter No. 11-31/2007-IA-III dated 13.07.2007 has accorded the Environmental Clearance for single building of Ground floor (stilt floor) + 1st to 5th upper residential floor, with 13,621.48 sq. mtrs. of permissible built up area

The existing CESSSED structures are now being redeveloped into a residential building of Wing A, B, C, E & F. The building configuration of the wings will be as follows-

Building Details	Building configuration	Height of the Building wing	Work Completed till date
Wing A	Ground Floor	3.75 Meters	Completed on site with OC pending.
Wing B	Ground Floor + 1 st to 13 th Upper Floors	41.45 Meters	Work till plinth area has been completed
Wing C	Ground Floor + 1 st to 7 th Upper Floors	23.90 Meters	Proposed and No work has been started till date
Wing E	Ground Floor	3.75 Meters	Proposed and No work has been started till date
Wing F	Basement +Ground Floor + 1 st to 13 th Upper Floors	41.40 Meters	Proposed and No work has been started till date
Total Built up Area Proposed			

Out of these 223 flats/ tenements and 37 shops, 134 flats/ tenements/shops will be given for rehabilitation of existing tenant and 68 no. of flats/ tenements/shops will be given to MHADA as surplus built up area. Total 51 flats will be sale components in this building.

The surrounding of the existing plot is also of mixed use i.e. Residential and Commercial. The site is surrounded by many more authorized structures and roads.

The site under reference is affected by CRZ-II zone. It abuts HTL of Arabian Sea. It is on the landward side of the existing Khan Abdul Gaffar Khan Road existing prior to 19/02/1991. Hence the work is permitted subject to the approval of CRZ clearance. Thus property attracts the CRZ legislation, which is reflected in CZMP plan.

The development site does not fall or contain the environmentally sensitive areas as specified in the coastal Regulation zone notification.

The total cost of the project is Rs. 66,62,54,400/- (Sixty Six Crore Sixty Two Lakh Fifty Four Thousand Four Hundred Rupees Only) as per the valuation report carried by certified registered valuer.

2. PURPOSE OF THE REPORT

Proposed redevelopment of plot bearing, C.S. No 1/47, 2/47, 117, 118, 119, 120 and 121 of Lower Parel Division, situated in G/South Ward, Mumbai, and thereby obtain Environmental Clearance as per clause 33(7) of DCR – 1991 in force as on 6th January 2011. The Plot was occupied by a cessed A category building with nine ground storey structures (Chawls), which is proposed to be redeveloped. 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 tenant to get permanent, safe structure.

As the site under reference is affected by CRZ-II zone, it attracts the CRZ legislation as per 6th January 2011 notification for Coastal Regulation Zone (CRZ and the regulating activities in the CRZ).

3. DESCRIPTION OF THE PROJECT

3.1 NATURE OF THE PROJECT

This is a proposal for redevelopment of residential building (Chawls) situated at C.S. No 1/47, 2/47, 117, 118, 119, 120 and 121 of Lower Parel Division, situated in G/South Ward, Mumbai in CRZ-II belt, as the same is situated within 500 mtr. from Arabian Sea. (Approx distance 325 mtrs.)

The proposal is for redevelopment of residential building (Chawls), which are situated on the landward side of existing Khan Abdul Gaffar Khan Road, the roads **in existence prior to 19/2/1991, as may be seen from CZMP 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 proposed to be consumed is 2.05, as per DCRs in force as on 6th Jan 2011, which is worked out on the governing criteria of rehab plus 50% incentive, whichever is higher.

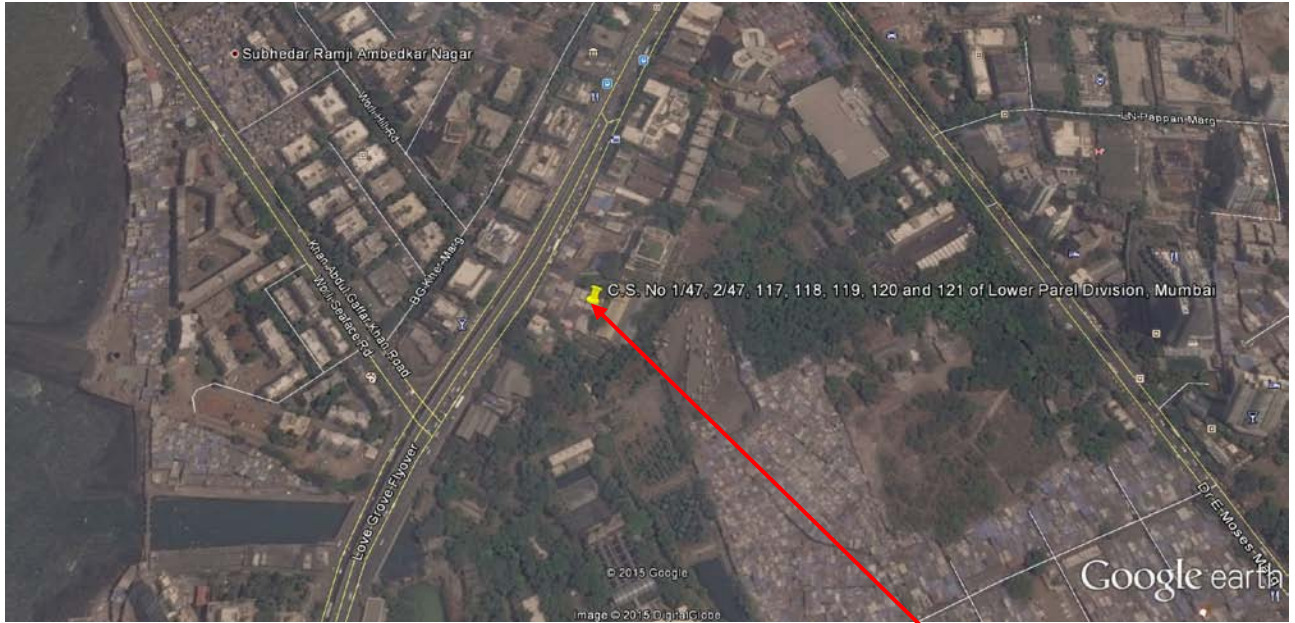
3.2 SIZE OF THE PROJECT

Total Area of the said plot is 9874.63 sq. mtr. Cost of the Project is Rs. 66,62,54,400/- (Sixty Six Crore Sixty Two Lakh Fifty Four Thousand Four Hundred Rupees Only).

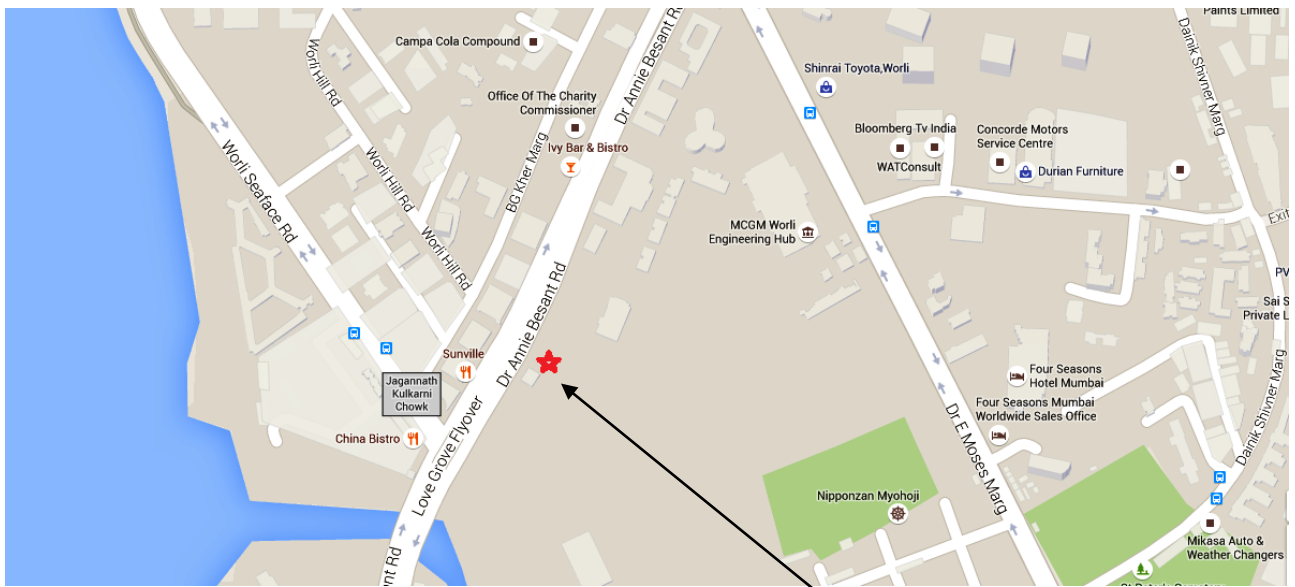
3.3 LOCATION

The plot bearing C. S. No 1/47, 2/47, 117, 118, 119, 120 and 121 of Lower Parel Division, situated in G/South Ward, Mumbai is situated in the Worli Division of Mumbai. The nearest railway station is Lower Parel Railway Station, 2.20 Km on the western line. The nearest bus stop is Acharya Atre Chowk bus stop, which is at about 400 meters away from the site.

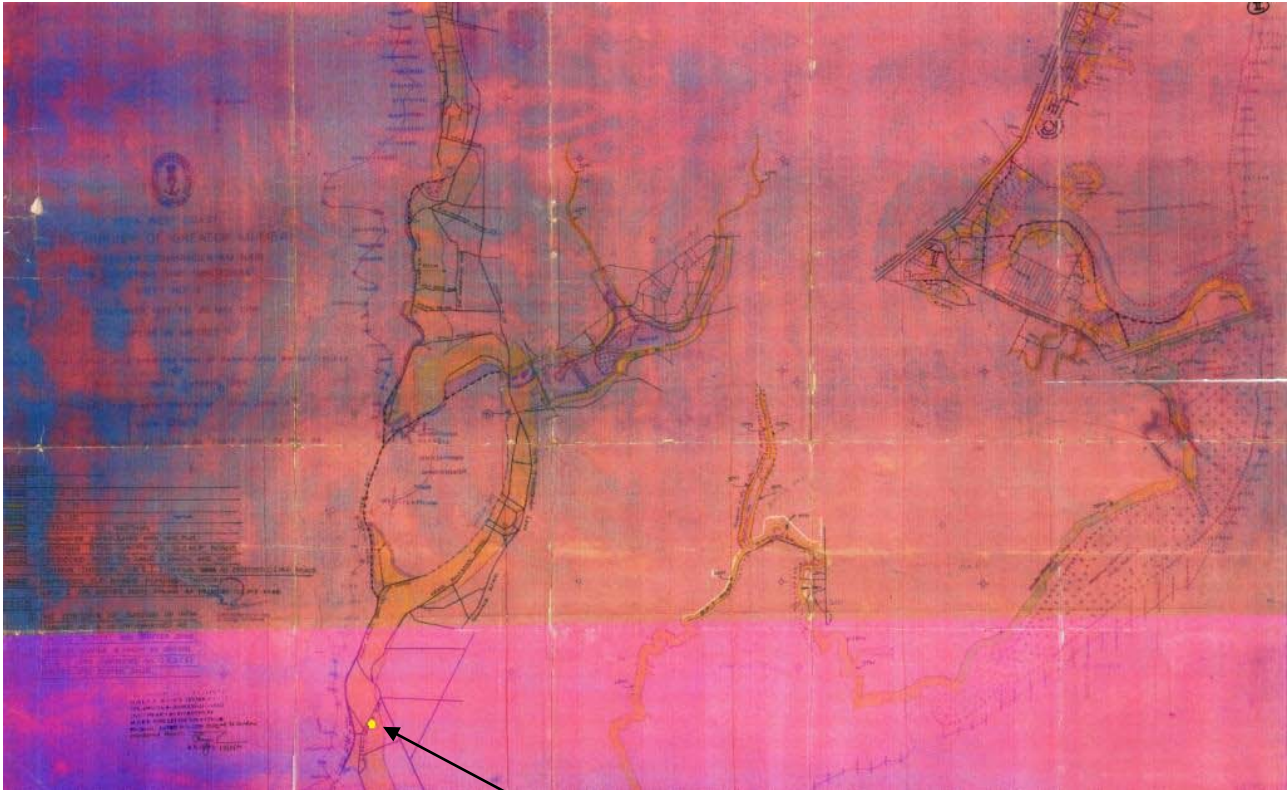
Google Earth Image of the site



SITE UNDERREFERENCE



SITE UNDER REFERENCE



CZMP Plan showing location of reference Plot

3.4 SITE DESCRIPTION

The site under reference is affected by CRZ-II zone and the property fall on landward side of the existing Khan Abdul Gaffar Khan 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 is 9874.63 sq. mtr.

Town / Tehsil	:	Mumbai
District	:	Greater Mumbai
State	:	Maharashtra
Latitude	:	18°59'39.78"N
Longitude	:	72°48'57.26"E

3.5 PROPOSED DEVELOPMENT**3.5.1 AREA**

A	Area Statement	Total (In Sq.Mt)
1.	Area of the Plot	9874.63sq. Mtrs
2.	Deductions For	0.00
	a) Set Back Area of Road	680.06 Sq. Mtrs
	b) Proposed Road	0.00
	c)Any Reservation	0.00
	Total (A+B+C)	680.06 Sq. Mtrs
3.	Net Area Of Plot (1-2)	9194.57 Sq. Mtrs
4.	Total Permissible B.U Area As Per Table I	19812.92
5.	Proposed B.U.A Bldg A (EB/3267/GS/A)	72.64
	Proposed B.U.A Bldg B (EB/3266/GS/A)	3790.64
	Proposed B.U.A Bldg C (EB/587/GS/A)	3851.70
	Proposed B.U.A Bldg E (EB/3264/GS/A)	79.26
	Proposed B.U.A Bldg F (EB/3268/GS/A)	6922.59
6..	Total Proposed B.U.A (A+B+C+E+F)	14717.03
7.	Excess Balcony Area Taken In F.S.I	0.00
	Existing BUA To Be Retained	
	a) Structure D (EB/3639/GS/A)	3267.38
	b) Structure O	878.61
	Total Built Up Area To Be Retained	4145.99
8.	Total Built Up Area	18896.42
9.	Balance B.U Area	949.90
10 .	F.S.I Consumed (8/3)	2.05

11.	Construction Built Up Area	2208.48
12.	Total R.G. Required	1162.61
13.	Total R.G. Provided	1585.65
14.	Parking Statement	
	Required Parking	103 Nos.
	Provided Parking	103 Nos.
	Building Structure	
15.	Height Of Building A	3.75 Meters
	Height Of Building B	41.45 Meters
	Height Of Building C	23.90 Meters
	Height Of Building E	3.75 Meters
	Height Of Building F	41.40 Meters

PROJECT DEVELOPMENT DETAILS

Proposed development						
1	Structure of Building		Building Details	Building configuration	Height of the Building wing	
			Wing A	Ground Floor	3.75 Meters	
			Wing B	Ground Floor + 1 st to 13 th Upper Floors	41.45 Meters	
			Wing C	Ground Floor + 1 st to 7 th Upper Floors	23.90 Meters	
			Wing E	Ground Floor	3.75 Meters	
			Wing F	Basement +Ground	41.40 Meters	

			Floor + 1 st to 13 th Upper Floors		
			Total Built up Area Proposed		
2	Tenements existing	145 including Commercial and Residential tenements. (Only 134 tenants have executed consent terms or permanent alternate Accommodations Agreements)			
3	Tenements proposed	223 Flats/tenements and 37 Non residential/commercial structures			
4	Maximum Height of Building from Ground level	41.45 mtrs			
5	Emergency Power supply (D.G. Nos. x KVa	1 no. 35 KVa			
6	Area required for D.G sets	5 sq. mt			
7	Salient features of the project				
	<ul style="list-style-type: none"> • Earthquake Resistance Building structure • Rain water Harvesting System in the complex • Energy Conservation; Provision of Solar water heating system. • Eco-Friendly Measures • Optimum use of Timber 				

3.5.2 UTILITIES

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

i) **WATER REQUIREMENT IN CONSTRUCTION PHASE:**

(Expected Consumption – total 35 cum/day)

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

Water Balance (Construction Phase)				
Sr. No.	Consumption	Input m³/Day	Loss m³/Day	Effluent m³/Day
1.	Construction Activities	30	30 (Tanker consumption)	Nil
2.	Domestic (50 Site Workers)	5	1	4
Total		35	31	4

Anticipated Impacts-

- Increased water demand during construction phase for site preparation, water spraying for dust suppression, for construction activities, curing, domestic and other water requirements for labour and staff onsite
- Waste water disposal by construction labour and staff can lead to pollution.
- Water logging creates unsanitary conditions and mosquito breeding at site

Mitigation Measures –

- Wastage of water used for construction curing shall be avoided
- One STP from proposed two STPs shall be provided for treatment of sewage
- Proper management of channelization of water to avoid water logging at site.

ii) **WATER REQUIREMENT IN OPERATIONAL PHASE:**

Sr. No	Component/Head	Occupant load	Water Requirement m ³ /day		Remarks
			Domestic	Flushing	
12	Total residential population	1273	114.57	57.28	@ 90/45 lpcd
2	Total non residential population (Including Commercial population)	279	5.58	6.975	@ 20/25 lpcd
3	Gardening Requirement		11.10 CMD		@7Litres/Sq.mtrs.
4	Car Washing requirement		1.03 CMD		@10 Litres/Car
5	Total Quantity of Water Required		184.41		For a total population 1552 Nos. of people.
6	Sewage generation		157.91 CMD		-
7	Sludge generated		3.16 CMD		-
8	Sewage treatment plant treated water		157.66 CMD		-

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.

Anticipated Impacts

- Lowering the infiltration capacity and increased run off
- Increased run off, Water logging in the low lying areas
- Stress on existing water supply & generation of waste water.

Mitigation Measures

- Provision of storm water drainage system with adequate capacity & proper maintenance of storm water drainage
- Use of water efficient technologies to reduce water consumption
- Treatment of waste water into Sewage Treatment Plant Recycling of STP treated sewage for flushing and gardening

iii) STP SYSTEM DESCRIPTION

Design Basis:

Sewage Treatment Plant:

- Number STPs proposed : 2 nos
- Phase -1, STP Capacity : 100 m³ /day.
- Phase - 2 STP Capacity : 100 m³ /day.
- Operation Time : 20 hrs.
- Hourly Flow (Feed to STP) : 9.7 m³ /hr.
- Peak Factor : 3.0
- Source of Sewage : Sewage generated from Housing.
- Mode of Operation : Manual or Semi-Automatic.
- Scheme of Treatment : MBBR Process.

Characteristics of Raw & Treated Sewage (After Tertiary Treatment)

The characteristics of raw sewage assumed are given below:

Sr. No.	Parameters	Unit	Raw Sewage	Treated Sewage
1	pH	-	6.5 -8.5	6.5 -7.5
2	Biochemical Oxygen Demand (BOD)	mg/l	300	≤ 10
3	Chemical Oxygen Demand	mg/l	400	≤30

	(COD)			
4	Total Suspended Solids (TSS)	mg/l	250	≤ 10
5	Oil & Grease	mg/l	15	≤ 5
6	Faecal Coliform	Nos./100ml	$10^6/100$	Nil
7	Total Coliform	Nos./100ml	$10^7/100$	Nil

SCHEME OF TREATMENT:

The sewage treatment plant will be designed for a capacity of 100 & 100 KLD. Sewage treatment plant scheme will be based on MBBR Process.

• Pre-treatment:

Pre-treatment will consist of Screening & Flow equalization.

• Secondary / Biological Treatment:

Secondary Treatment process will consist of Biological Aeration and Biological Clarification.

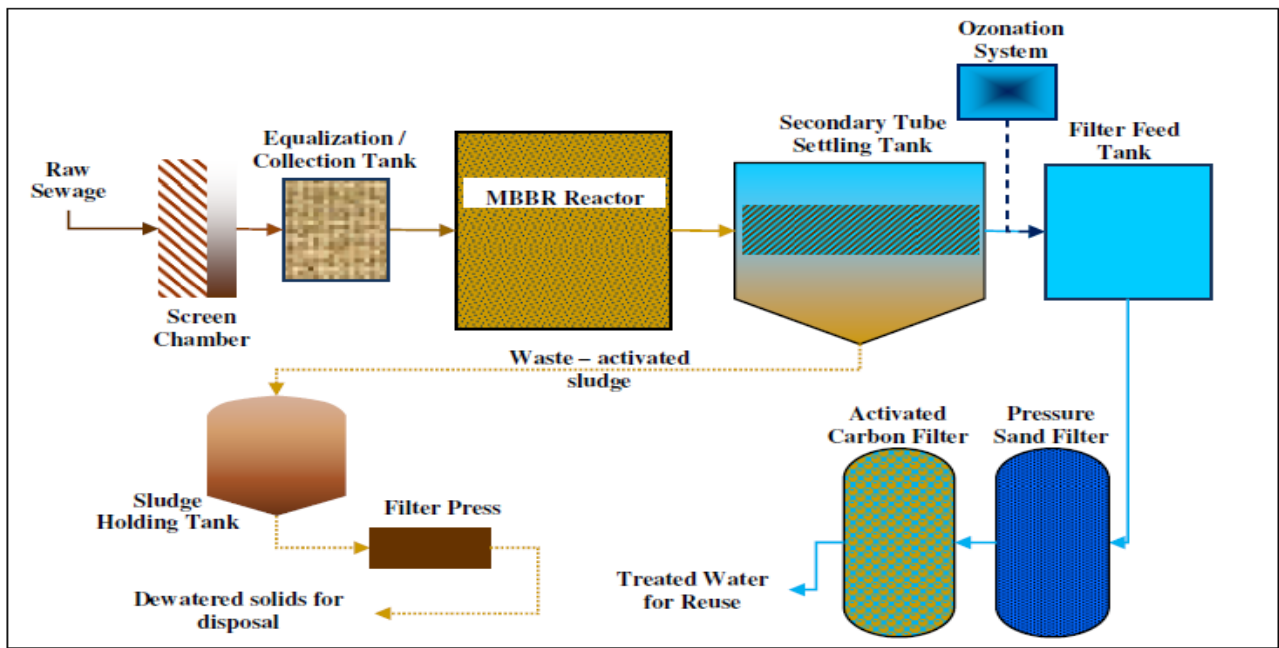
• Tertiary Treatment:

Tertiary treatment process will consist of Media (Sand & Carbon) Filtration & Disinfection.

• Sludge Treatment:

Sludge treatment process will consist of Sludge Holding Tank & Filter Press.

Process Flow Diagram STP (MBBR Process):



PROCESS DESCRIPTION SEWAGE TREATMENT PLANT:

The sewage treatment plant will be designed for a capacity of 100 & 100 KLD with a peak factor of 3. The scheme of treatment plant will be based on MBBR Process. It will be salient, odorless & energy efficient. Raw sewage will then be passed through fine manual bar screens to remove solids, floatables from raw sewage stream before passing to equalization tank. The sewage then will be collected in receiving /collection /Equalization Tank. The receiving /collection /Equalization Tank will be provided with Jet Aerators for mixing and aseptic conditions. Raw sewage from equalization tank will be lifted by using Submersible Raw Sewage Lifting Pumps. Aeration tank is provided with Diffused Aeration Systems for biological aeration purpose.

In the aeration tank oxidation biological matter occurs. The aerobic bacteria present in activated sludge help in digestion of organic matter degradation BOD. Aerobically digested sewage water is then passed to secondary clarifier where it biological Flocs formed will be removed and separated by means of gravity. The excess bio sludge is sent sludge holding tank where it is collected. Clarified water is then passed through multimedia and activated carbon filters for removing turbidity by means of Submersible Filter Feed Pumps. Multimedia filtration removes fine particulate and suspended solids while activated carbon filter removes odour and organic traces. Ozonation is used for disinfection of treated water. MBBR technology is characterized by MBBR media, made of virgin PP (polypropylene), used as a support for the growth of large biomass

concentrations, submersible aeration and media retaining screens, to keep the media inside aeration tank. The MBBR media offers a large surface available for the fixed biomass to grow. The presence of this fixed biomass increases the loading rate, which allows the treatment of more soluble pollution per cubic meter of tankage volume than conventional technologies. This technology is suitable for the construction of new installations and the upgrade of existing biological wastewater plants. In this case, MBBR media is directly added inside of the existing basins, and the aeration system is adapted with the new design. MBBR technology can be used for BOD and nitrogen removal applications. MBBR media consists of a small cylinder and the internal shape looks somewhat like a honeycomb. It is divided into multiple chambers that offer a large contact surface for the bacteria to grow on. Polypropylene material used is chemically inert and protected against UV radiations. Its relative density is approximately 0.95, which enables the media to float. The geometry used offers an excellent ratio between specific surface and total surface. Therefore, the shape provides a strong structural strength. Details of ozonation and nitrate phosphate removal are attached as Annexure 11.

HRT (Hydraulic Retention Time) in MBBR Process (Various process units).

Sr. No.	Process Unit	Application	HRT (Hrs.)
1	Equalization Tank	Flow equalization	7
2	Aeration Tank	Biological aeration	6
3	Secondary Settling Tank	Biological clarification	2.5
4	Filter Feed Tank	Filter Feed & backwashing of filters	1 – 1.5

Some important advantages of MBBR process are as follows.

- No need to control MLSS (mixed liquor suspended solids)
- No need to control F/M Ratio
- No need to control SVI (Sludge Volume Index).

The MBBR consists of a tank filled with specially developed media. The media are made of special material of suitable density that can be fluidized using an aeration device through diffusers.

A bio-film develops on the media, which move along the effluent in the reactor. The movement within the reactor is generated by providing aeration with help of diffusers placed at the bottom of the reactor. This thin film on the media enables the bacteria to act upon the bio-degradable matter in the effluent and reduce BOD/COD content in presence of oxygen from the air used for fluidization.

Benefits:

- Odorless operations, with self-regulating system.
- High bio-film surface area: compact plants with high loading rates.
- Reduced power consumption.
- Non-clogging design, better oxygen transfer efficiency.
- Attached growth process-no sludge recycling, low sludge production, no monitoring of M.L.S.S
- Removes E.Coli(Coli form)
- Simple to operate, with low maintenance requirements.

iv) **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

- Connected Demand: 1309.101 kW
- Maximum Demand:1.722 MVA
- The electricity supply will be available from BEST.

ENERGY SAVING MEASURES

The following Energy Conservation Methods are proposed in the project:

- Solar & LED Lights for common area use.
- Use of Solar System for Hot water Requirement.
- DG sets will be kept 6m or more away from Buildings.

v) **FUEL**

DURING CONSTRUCTION PHASE

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

All the equipment are electrically driven except JCB, porcelain, 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 1273 persons residing in the building, 156 persons will be non residential staff including drivers, security and 123 people will be commercial population in the building.

4. 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.

4.1 LIST OF MATERIALS

The approximate construction material required for the proposed redevelopment is given below.

Sr. No.	Item	Unit	Quantity	Source	Process
1.	Sand	CUM	6541	River bed	Nil
2.	Aggregate	CUM	14551	Quarry	Crushing
3.	Standard Bricks		5267	Red Soil	Heating, Moulding
4.	Timber	M.T	239	Forest	Cutting & Trimming
5.	Construction Waste	Kg/ Day	449	-	-

- 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.

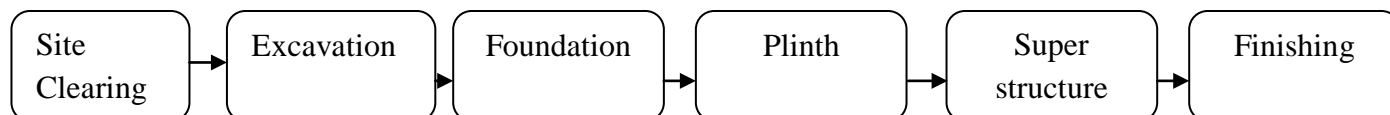
4.2 LIST OF EQUIPMENTS

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

Sr. No.	Equipments	Numbers	Operation	Duration
1.	JSB, Poclairn	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

4.3 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.

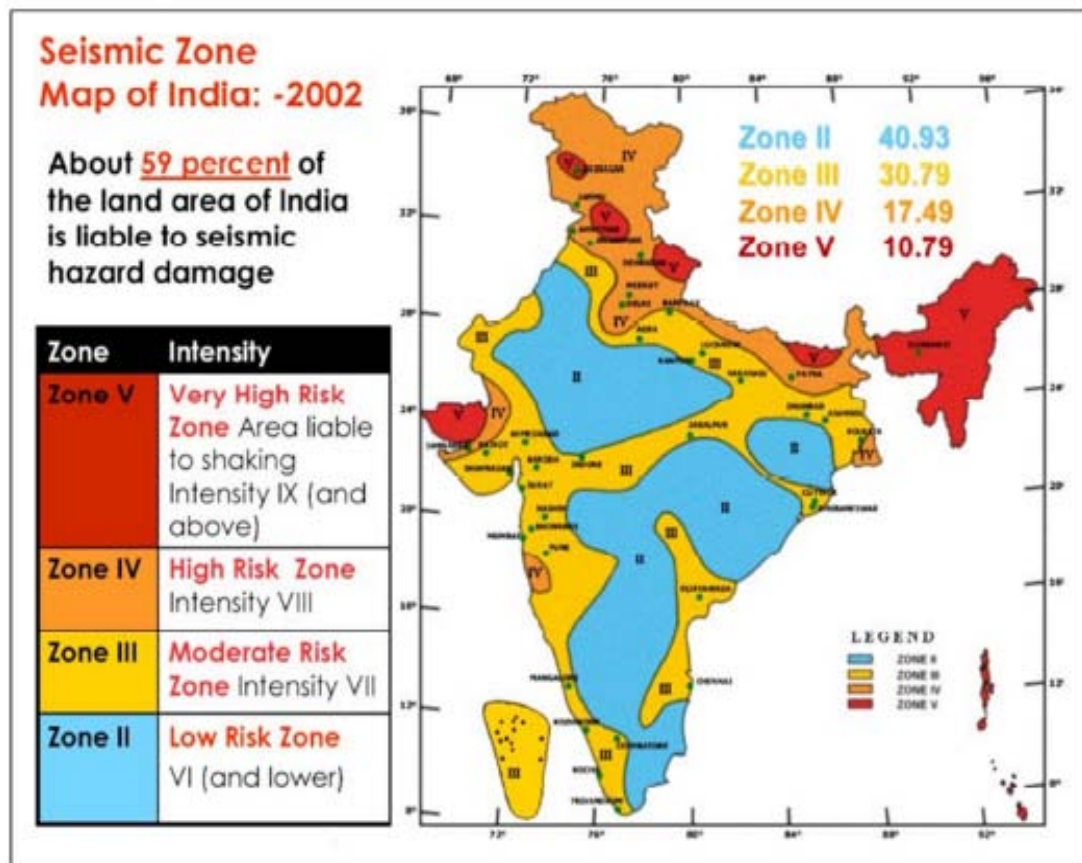
- 3] Site barricading by corrugated tin sheets up to height of 5.0 mtrs will be done to protect the surrounding area of the project site from nuisance /dusting.
- 4] All electrical connections & cables will be checked by authorized persons to ensure the safety of workers on field.
- 5] Water sprinkling will be done, wherever required to reduce the dusting in atmosphere. 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 handling 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 5.00 mtr. when the structures get raised above the required height from the ground.

4.4 SEISMICITY:

Seismic zone map was initially based on the amount of damage suffered by the different regions of India because of earthquakes. Following are the varied seismic zones of the nation,

- Zone - II: This is said to be the least active seismic zone.
- Zone - III: It is included in the moderate seismic zone.
- Zone - IV: This is considered to be the high seismic zone.
- Zone - V: It is the highest seismic zone.

Proposed project and Study Area comes under Seismic Zone III.



5. ENVIRONMENTAL CONCERNS

5.1 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 ₂ ($\mu\text{g}/\text{m}^3$)	50 ~ 80	80	10-15	10-15
NO _x ($\mu\text{g}/\text{m}^3$)	40 ~ 80	80	5-10	5-10

Ref: 24 Hourly values as per Central Pollution Control Board, National Ambient Air Quality Monitoring, Notification 11th April, 1994, Schedule 1.

5.2 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.

5.3 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.

Sewage generated during operation phase will amount to 184.41 CMD which will be treated in the Sewage Treatment Plant. The treated water will be used for non domestic purposes such as gardening, flushing etc.

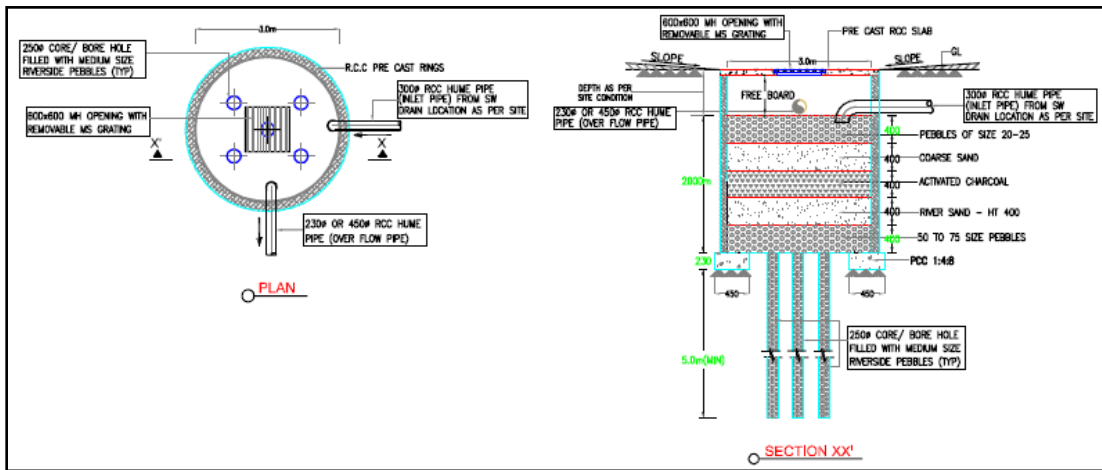
3] **Treatment & Disposal:-** The Domestic Effluent generated in construction phase will be disposed off in existing MCGM Sewer.

4] **Rain Water Harvesting:-** The Plot is occupied by a CESSSED A category building (Chawls). The said Cessed category building (Chawls) are now proposed to be redeveloped in building of 5

wings. Rooftop rain water harvesting is proposed in the project. The permeable paver blocks are proposed along with 1 Recharge pits to increase the percolation of rain water into the soil rather than flowing to the drain.

*** (AS PER MOEF GUIDELINES)**

- Percolation Pits: 1 nos. (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 runoff and reduce the load on external storm water drain.

5.4 NOISE POLLUTION

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

5.5 NOISE LEVEL MITIGATION

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

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.

5.6 SOLID WASTE MANAGEMENT DURING OPERATIONAL PHASE

1] The project proponents have proposed provision for segregation and collection of biodegradable & non-biodegradable waste within the premises.

2] Solid transfer stations have been proposed for collection, sorting, segregation, storage & transportation of biodegradable and non-biodegradable waste.

CALCULATION FOR QUANTUM OF SOLID WASTE TO BE GENERATED IN THE BUILDING DURING OPERATIONAL PHASE:

- Total no of persons = 1552 persons
- Generation of Total waste per person = 500 grams/day (as per Solid waste management study – Year - 2005 conducted by NEERI)
- Total solid waste generation will be $1552 \times 500 \text{ gms/person/day} = 776.00 \text{ Kg}$
- Generation of organic waste = 30.84% of total waste (ref. Table 2 in next page)
- So total organic waste generated by the occupants = $87.5 \times 0.3084 \text{ grams} = 239.32 \text{ kg}$ by all occupants of the building.
- We will provide one bins of each capacity 5 kg at every landing.
- Dry waste will be collected separately in wheeled bins as required as per MCGM guideline and transported to common collection area by MCGM.
- **E-waste** : Shall be stored separately and disposed of to the recyclers authorized by MPCB

Source: Municipal Solid Waste Management in India: Present Practices and Future Challenge, Sunil Kumar,

http://www.cd3wd.com/CD3WD_40/ASDB_SMARTSAN/Kumar.pdf

Table 1

Per Capita Quantity of Municipal Solid Waste in Indian Cities (NEERI, 1996)

Population Range (in million)	Average Per Capita Value kg/capita/per day
1.0 – 0.5	0.21
0.5 – 1.0	0.25
1.0 – 2.0	0.27
2.0 – 5.0	0.35
> 5.0	0.50

Table 2

Physico-chemical Characteristics of MSW in Indian Cities (NEERI, 1996)

Population range (in million)	Number of cities surveyed	Paper*	Rubber*, leather and synthetics	Glass*	Metals*	Total* compostable matter	Inert* material	Nitrogen* as Total Nitrogen	Phosphorous* as P ₂ O ₅	Potassium* as K ₂ O	C/N ratio	Calorific value in Kcal/kg
0.1 to 0.5	12	2.91	0.78	0.56	0.33	44.57	43.59	0.71	0.63	0.83	30.94	1009.89
0.5 to 1.0	15	2.95	0.73	0.35	0.32	40.04	48.38	0.66	0.56	0.69	21.13	900.61
1.0 to 2.0	9	4.71	0.71	0.46	0.49	38.95	44.73	0.64	0.82	0.72	23.66	960.05
2.0 to 5.0	3	3.18	0.48	0.48	0.59	56.67	49.07	0.56	0.69	0.78	22.45	907.18
>5	4	6.43	0.28	0.94	0.80	30.84	53.90	0.56	0.52	0.52	30.11	800.70

* All values are in percent, and are calculated on wet weight basis

+ All values are in percent, and are calculated on dry weight basis



A sample waste collection bin to be

Kept in lobby area



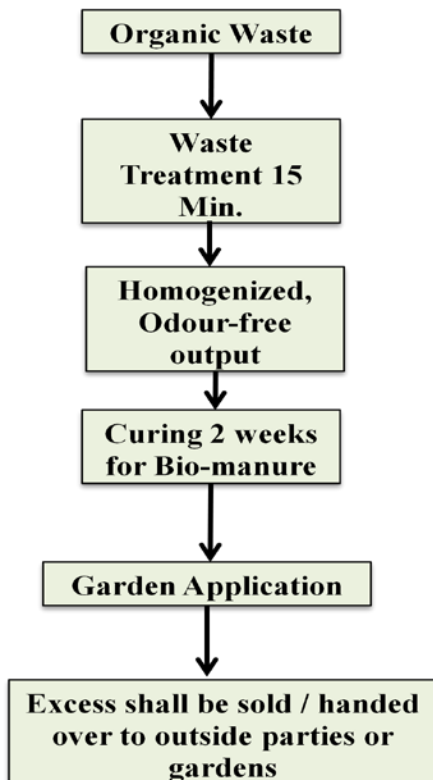
Wheeled bins with lid

120 ltr., 240 ltr., 360 ltr. capacity wheeled bins

Bins recommended by BMC to be used

for shifting the waste from building to common area

We will be using organic waste converter to create manure from the organic waste. Manure generated will be used for plantation and gardening purpose.



ORGANIC WASTE CONVERTER COMPOSTING PROCESS

5.7 CONSTRUCTION WASTE MANAGEMENT PLAN

Sr. no.	Item	Reuse/Recycle
1.	Excavated Soil	Formation and Filling of Road and garden top soil - within plot (RG area)
2.	Steel Metal	Scrap steel use for small size slab, pathway etc and balance will be sold as scrap for re-use.
3.	Red Bricks	Waterproofing at floor level for wet areas – terrace, toilets, etc

5.8 GREEN BELT DEVELOPMENT

- Net Plot area: 9,874.63 m²
- Required RG Area: 1162.61 m²
- Proposed RG Area: 1585.65m² (16% of Net plot area)
- Number & list of trees species to be planted in the ground RG: 160 Nos.

No.	Botanical Name	Common Name	Qty	Characteristics
1.	<i>Mimosa pselengi</i>	Bakul/Spanish cherry	10	Fragrance, evergreen, shade giving
2.	<i>Cassia fistula</i>	Bahava/Amaltaas		Leguminous & nitrogen fixing, drought resistant, medicinal plant
3.	<i>Azadirachta indica</i>	Neem	10	Medicinal importance, odor resistant, habitat for birds
4.	<i>Plumeria alba</i>	Franjipani	15	Ornamental & scented flowers,
5.	<i>Anthocephalus cadamba</i>	Kadamba		Shady, large deciduous tree, fast-growing graceful tree, ball shaped flowers.
6.	<i>Saraca asoca</i>	Sitaashoka	10	Shady tree with red-yellow flowers
7.	<i>Mangifera indica</i>	Mango	10	Shady tree, fruit bearing
8.	<i>Caryota urens</i>	Fishtail palm		Tall evergreen tree
9.	<i>Michalia champaka</i>	Soancharffa	10	Fragrant, evergreen, flowering, scented flowers,
10.	<i>Artocarpus heterophyllus</i>	Jackfruit		Fruit bearing, evergreen, commercial value
11.	<i>Ficus bengalensis</i>	Banyan tree	10	Shady tree, habitat for birds and small animals

12.	<i>Bahunia tomentosa</i>	Yellow orchid tree	10	Small tree with small yellow flowers, butterfly host plant
13.	<i>Nyctanthes arbortristis</i>	Queen of the night	15	Beautiful white fragrant flowers, good for hedge, flowers attract butterflies & moths
14.	<i>Albizia lebbeck</i>	Shirish	10	Shady tree, yellowish green fragrant flowers. Tree widely used as timber.
	Total No. of Trees		160 Nos.	

- No. of Existing Trees: 67
- Number of trees to be cut, trees to be transplanted :01
- NOC for the tree cutting/ transplantation/ Compensatory plantation, if any: Obtained wise No. DYSG/TA/MC/1342 dated 17.01.2009.

6. 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 June 2019 if everything went as per planning.

7. TRAFFIC MANAGEMENT

7.1 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.

7.2 OPERATIONAL PHASE

- About 103 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.

8. 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.

8.1 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.
- 3] Site barricading by corrugated tin sheets up to height of 5.0mtr 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 handling 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 5.0 mtrs when the structures get raised above the required height from the ground.

9. 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.