

# **EXECUTIVE SUMMARY**

*For*

**Implementation of Slum Rehabilitation Scheme (SRA) and  
construction of MHADA & Sale Residential Buildings**

**At**

*Nityanand Co. Op. Housing Society (Slum)*

*Plot Bearing C.T. S. No. A/791(pt) of Village – Bandra,  
Bandra Reclamation, A – Block, BKC, Mumbai 400 050.*

**Developer**

**M/s Wizard Construction (I) Pvt. Ltd.**

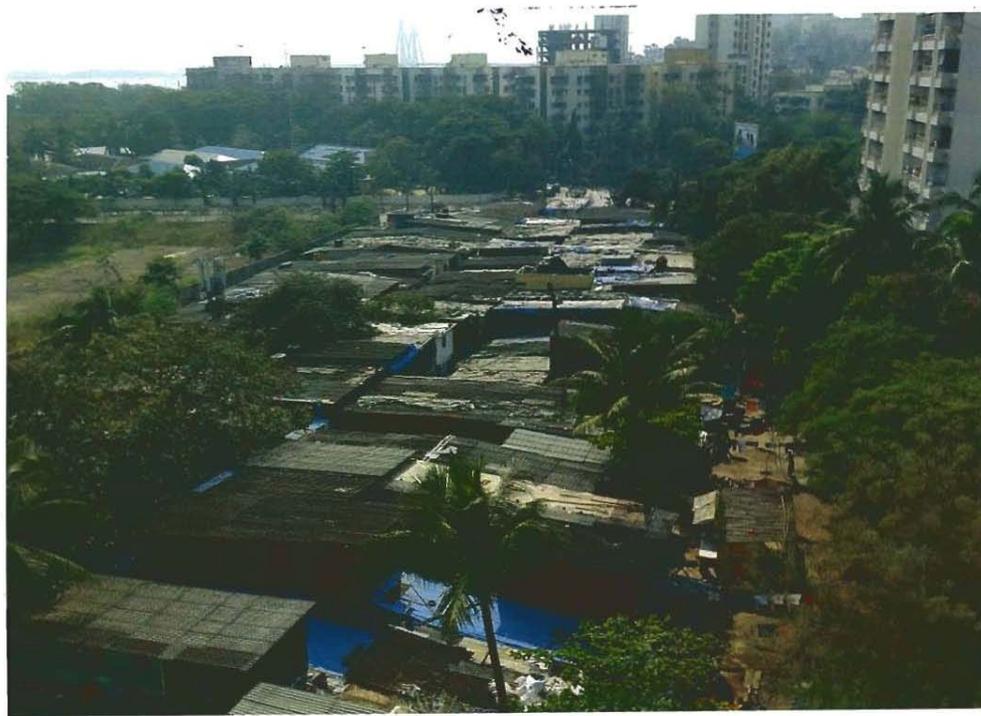
## **1.1 Introduction**

Mumbai the capital of Maharashtra is also the financial capital and the most densely populated city of India. Mumbai has grown in recent decades for many residential and commercial developments. Migration, both from within the state and outside is a natural corollary of development. Mumbai is a magnet that attracts people in search of jobs and opportunities. This population growth has requirement of housing, transportation, provision of civics amenities etc. We are aware that there are constraints on the availability of open land within the city limits coupled with fast growing demand for houses and shortage of housing stock. This has resulted in explored proliferation of slums. One such slum is situated in MHADA's layout at Bandra Reclamation, BKC – 'A' Block on plot admeasuring 17800 Sq. m. in CRZ II area. So, M/s Wizard Constructions Pvt. Ltd. has proposed redevelopment of existing slums on subjected land under Slum Rehabilitating Scheme (SRA) and also proposes to develop MHADA and sale building.

## **1.2 Need of the Project**

The total area of this plot is 17871 Sq Mts., out of which the above slums have occupied the area admeasuring about 16098.14 Sq. Mts. Housing 349 slum dwellers. Nityananad Co. Op. Housing Society is a slum colony and as per G. R. No. SRA-1001/ Ltr. No.125/14/SRA-1 dtd. 22 July, 2014 and amended DC Regulation 33(10) it is eligible for free permanent accommodation under Slum Rehabilitation Scheme. Proposed redevelopment thus will help the existing tenants to get permanent, safe structure, good hygienic surrounding conditions, upgraded standard of living and aesthetic environment. At present they are residing in Slum in poor hygienic conditions and unsafe structures. According to MoEF's CRZ Notification dated 19/02/1991, the plot u/r is in CRZ II as shown on the sanctioned Planning Proposals of BKC as shown in Figure 1.1.





**Figure 1.2: Photographs of Existing Slums Buildings**

## APPLICABILITY OF CRZ NOTIFICATION

As the site under reference is affected by CRZ-II zone, it attracts the CRZ legislation as per 6<sup>th</sup> January 2011 notification for Coastal Regulation Zone (CRZ and the regulating activities in the CRZ). According to para 4 (d) of CRZ notification 2011, the proposal for the construction in the areas falling in CRZ-II shall be approved by the concerned State or Union territory Planning authorities. In accordance with this notification one can obtain recommendations from the concerned CZMA and subsequently CRZ clearance accord on the basis of requisite documents like Form I, CZMP map, DP plan etc.

### 1.1 IDENTIFICATION OF PROJECT PROPONENT

M/s Wizard Constructions Pvt. Ltd. has proposed redevelopment of existing slums on subjected land. The details of the project proponent are given in Table 1.1.

**Table-1.1: Details of Contact Person**

Sr. No.	Particular	Details
1	Name of Developer	M/s Wizard Constructions Pvt. Ltd.
2	Name of Contact person	Mr. Rajkumar Kandaswamy
3.	Designation of Contact person	Director
4.	Contact No	022- 42215555
5.	Email	rajswamy9@gmail.com
6.	Address	901, "Sapphire", S. V. Road and 1st Road Corner, Khar, (W), Mumbai – 400 052

### 1.5 LOCATION OF THE PROJECT

The proposed project admeasuring about 17800 sq. m. of plot area is situated on C. T. S No. A/791 (pt) of Village Bandra (W), Taluka Andheri, Mumbai. The Google image of the proposed site is given in Figure 1.3 and Location of Proposed Project on CZMP Map is given in Figure 1.4.



Figure 1.3 Location of Proposed Project on Google Image



Fig. 1.4: Showing Location of Proposed Project on CZMP Map

## 1.6 DESCRIPTION OF PROJECT SITE

The proposed project has existing access road from Krishna Acharya Road as well as Western Express Highway at Bandra Reclamation. The environmental features are illustrated in given Table 1.2 given below.

**Table-1.2: Environmental Setting of Proposed Project**

Sr. No.	Particulars	Details
1	Latitude	19 <sup>0</sup> 02'49.99" N
2	Longitude	72 <sup>0</sup> 49'43.81" E
3	Elevation above MSL	3.0 m above Mean Sea Level
4	Climatic Conditions	Maximum Temperature :34.4 °C Minimum Temperature :17.5 °C Annual Rainfall :2567.5 mm
5	Present land use at the proposed site	Residential
6	Transport Connectivity	
A	Nearest Highway	Western Express Highway
B	Nearest Railway Station	Bandra Railway Station (2.8 km – NE) Mahim Railway Station (3.4 km – S)
C	Nearest Road	Western Express Highway Krishna Acharya Road
7	Social Aspect	
A	Nearest School/College	IES Management College and Research Centre (500 m - E) Saint Joseph's Convent High School (1.2 km -N)
B	Nearest Hospital	Lilavati Hospital & Research Centre (600 m- NE) Holy Family Hospital (1.5 km - N)
C	Nearest Fire Station	Shivaji Park Fire Station (4.3 Km – S)
8	Hills/Valleys	Nil
9	Ecologically sensitive zones within 15-km distance	CRZ - III
10	Seismic Zone	Zone – III

## 1.7 PROJECT LAYOUT

The proposed project is a redevelopment project which comprises of 3 Buildings:- Sale Building, MHADA Building and SRA Building.

Sale Building: - Two Wings :- 1) 1 wings having Basement + Ground Floor + 2 lvl Podium + 1<sup>st</sup> to 10<sup>th</sup> residential Floors. 2) 1 wings having Basement + Ground Floor + 2 lvl Podium + 1<sup>st</sup> to 12<sup>th</sup> residential Floors.

MHADA Building: - Two Wings are having Basement + Ground Floor + 2 lvl Podium + 1<sup>st</sup> to 24<sup>th</sup> Floors

SRA Building: - Eight Wings are having Ground Floor + 1<sup>st</sup> to 14<sup>th</sup> Floors. The layout block plan of the proposed project is shown in Figure 1.5.

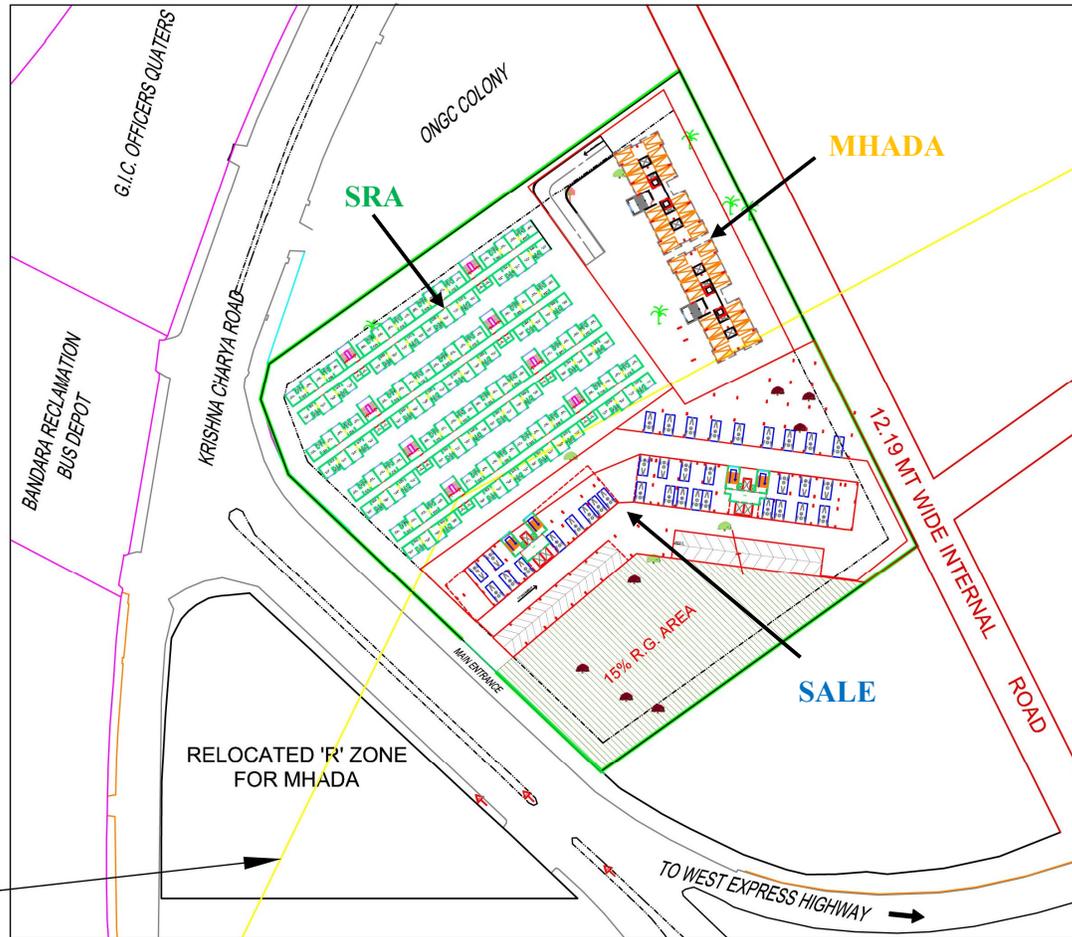


Figure 1.5: Layout Plan of the Proposed Site

## 1.8 BRIEF DESCRIPTION OF PROJECT

The brief description of the proposed project is given Table 1.3.

Table 1.3: Brief description of the project

#	Particular	Details
1	Project Type	Residential
2	Location	
	CTS No	CTS No. A/791(pt)
	Village	Bandra
	Tehsil	Bandra
	District	Mumbai
	State	Maharashtra

3	Site fall under CRZ I/II/III	CRZ – II & III
4	Distance of proposed building from HTL	235 m (approx.)
5	Proposed Plot Area	17800 sq. m
6	Permissible FSI	3.00
7	Proposed BUA	54300 Sq. m
8	Total Construction area	120583.91 Sq. m
9	No of Building	SALE Building – 1(2 wings) MHADA Building – 1 (2 wings) SRA Building - 1(8 wings) TOTAL – 3 ( 12 Wings)
10	Configuration of proposed Buildings	1) Sale Building: - 2 Wings wings are having Basement + Ground Floor + 2 lvl Podium + 1 <sup>st</sup> to 10 <sup>th</sup> & 1 <sup>st</sup> to 12 <sup>th</sup> Residential floor respectively. 2) MHADA Building: - 2 wings having Basement + Ground Floor + 2 lvl Podium + 1 <sup>st</sup> to 24 <sup>th</sup> Floors 3) SRA Building: - 8 wings having Ground Floor + 1 <sup>st</sup> to 14 <sup>th</sup> Floors
11	Population	SRA Building:- 4500 MHADA Building:- 960 SALE Building:- 220 Visitors:-568 Total Population:- 6248 (5680 Residential & 568 Visitors for SRA, MHADA & SALE Building.)
12	Water	
a	Source	MCGM
b	Total water requirement	792.36 KLD
c	Total sewer generation	687.85 KLD
d	Mode Of Disposal	Excess wastewater to Municipal Sewer line after treatment in STP
13	Solid Waste Generation	2.6 MT/D
	Mode of Disposal	In house management - OWC/Handed over to MC
14	Power	
a	Requirement	Connected Load <ul style="list-style-type: none"> <li>▪ For SRA:- 1388 KW</li> <li>▪ For MHADA:- 698.38 KW</li> <li>▪ For Sale:- 697.96 KW</li> </ul>
b	Source	Reliance Energy
15	Project cost	
16	Parking Details	For MHADA Building: 192 Nos. For SALE Building: 137 Nos. For SRA Building: NA

## 2.0 DESCRIPTION OF THE ENVIRONMENT

### 2.1 METEOROLOGICAL

<i>Relative Humidity</i>	<i>Temperature</i>	<i>Rainfall</i>
Climate of district Mumbai can be generally classified as warm and moderately humid. Relative humidity ranges from 32 % in April to 82 % in July.	Annual Mean Maximum Temperature: 36 °C Annual Mean Minimum Temperature: 16.5 °C	Total Mean Annual Rainfall: 2567 mm

### 2.2 AMBIENT AIR QUALITY

The range of average values of the pollutants is as below.

Parameters	Range of Pollutants Present	Unit
SO <sub>2</sub>	19.0 – 29.0	µg/m <sup>3</sup>
NO <sub>x</sub>	26.5 – 42.0	µg/m <sup>3</sup>
RSPM	78.0 – 168.0	µg/m <sup>3</sup>

### 2.3 NOISE LEVEL

#### *Day Time Noise Levels (L<sub>day</sub>)*

The noise levels ranged between 48.20 dB (A) to 74.60 dB (A).

#### *Night Time Noise Levels (L<sub>night</sub>)*

The noise levels ranged between 25.99 dB (A) to 51.15 dB (A).

### 2.5 WATER QUALITY

#### Ground Water Quality:

Parameters	Units
pH	7.8
Suspended Solids	40.0 mg/L
TDS	280 mg/L
Conductivity	300 µs/cm
Chloride	302 mg/L
Hardness	200 mg/L

### 2.5 DEMOGRAPHY AND SOCIO –ECONOMIC PROFILE

Ward	Area	Land Area	Households	Population	Density/Km <sup>2</sup>
H/W	Bandra	11.55 Sq. Km	84228.2 Apporx.	421141 Apporx.	42114.1Apporx.

Source: <http://www.mcgm.gov.in/irj/portal/anonymous/qlwardhw>

### 3.0 ANTICIPATED ENVIRONMENTAL IMPACTS & MITIGATION MEASURES

#### 3.1 WATER SUPPLY AND WASTE WATER MANAGEMENT

##### **Construction Phase:**

##### **Water Supply:**

During construction phase, water will be supplied by MCGM for drinking and other domestic purposes of the construction labours and by tankers to be used for construction. Total water requirement during the construction phase is about 08 cmd. Water will be utilized for domestic use of construction laborers and for construction activity.

##### **Waste water generation:**

Waste water during the construction phase will be sewage generation, estimated as 8 cmd (80% of water supplied). The details of Water Requirement and Waste generation during Construction Phase are given in Table 1.4.

**Table 1.4: Water Requirement and Waste generation during Construction Phase**

Sr. No.	Purpose	Source	Quantity (cub.m/day)	Waste water generated (cub.m/day)
1.	Domestic use of construction workers	MCGM	10	8 (@80% of water supply)
2.	Construction activity	Tanker water	40	--
	<b>Total</b>		<b>50</b>	<b>8</b>

##### **Management:**

1. Temporary toilets would be made available for construction workers. It would be directly connected to the existing municipal sewer line for disposal of wastewater.
2. Care will be taken to ensure that the water used for construction purposes does not accumulate on the site to prevent breeding of mosquitoes.

##### **Operation Phase:**

##### **Water Supply:**

During operation phase, water supplied by MCGM will be used for domestic purpose and for other purposes like flushing, gardening etc,

**Water requirement**

The average water consumption for residential buildings has been calculated as 135 litre per capita per day (90 liter for domestic purposes and 45 liter for flushing) (as prescribed by the Central Public Health and Environmental Engineering Organization or CPHEEO). During operation phase, water supplied by MCGM would be used for domestic purpose and for other purposes like flushing & gardening etc., treated water from proposed Sewage Treatment Plants (STP) would be used. The details of Water Requirement and Waste generation during Operation Phase are given in Table 1.5 A and 1.5 B. Water Balance during Monsoon and non-monsoon season is given in figure 1.6A & 1.6 B respectively.

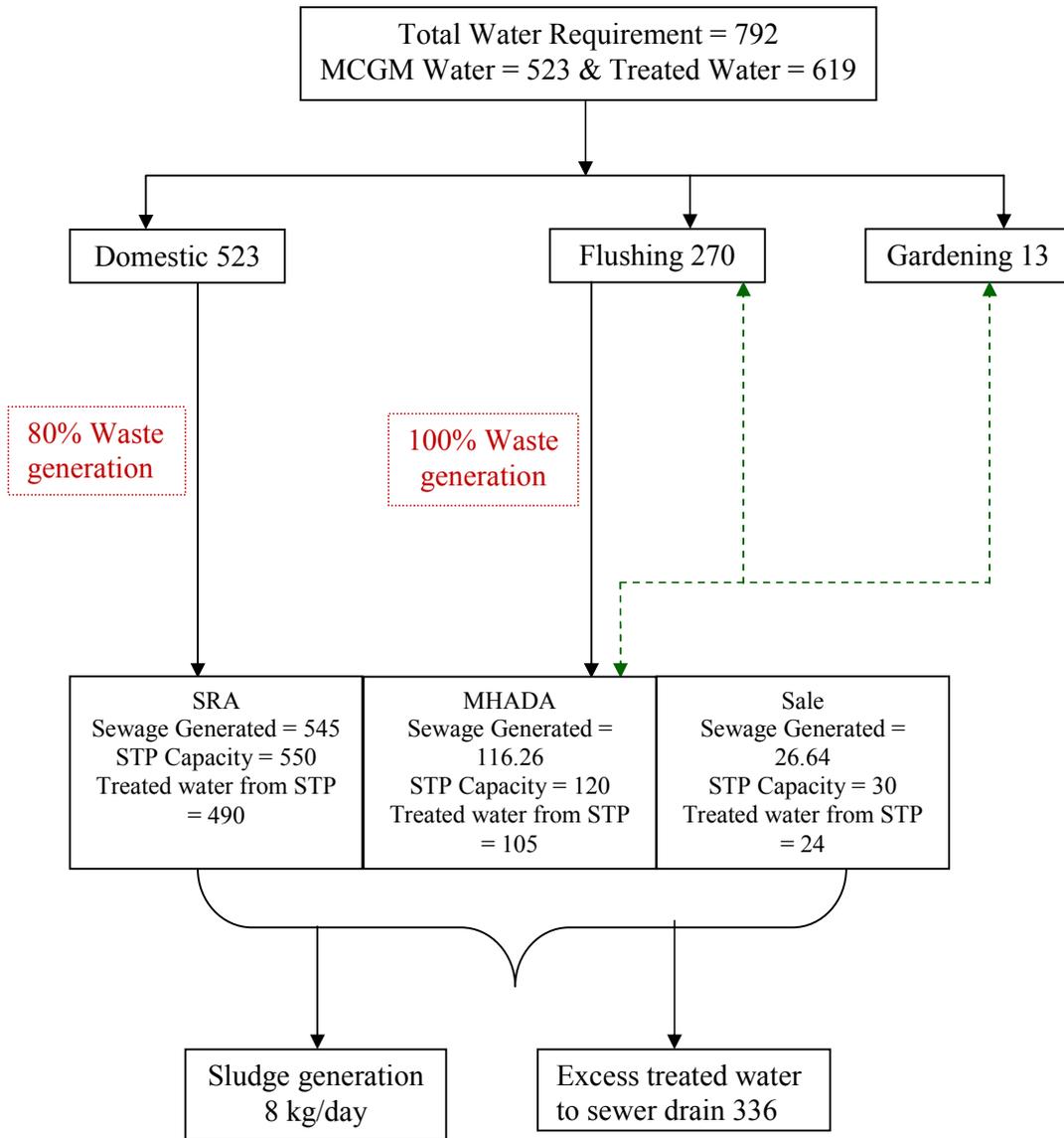
**Table 1.5 A: Water Requirement during Operation Phase**

<b>Purpose</b>	<b>Quantity (CMD)</b>
Total water requirement	792.36
Domestic water requirement	522.56
Flushing water requirement	269.80
Landscape Water Requirement	13
Total sewage generation	687.85
Total Recycled Water	619.06
Balance water to sewer line	335.92

**Table 1.5 B: Water Requirement and Waste generation during Operation Phase**

Sr. No.	Description	No. of Flats	No of persons per flat	Total Nos. of People	Domestic (CMD)	Flushing (CMD)	Total water Demand (CMD)	Waste water generated (CMD)	STP Capacity (CMD)	Treated water from STP (CMD)	Landscape water Requirement (CMD)	Excess water Diverted in to sewer (CMD)
1	SRA	900	5	4500	405	202.5	607.5	526.5	550	490		
	VISITORS			450	9	11.25	20.25	18.45				
2	MHADA	192	5	960	86.4	43.2	69.12	112.32	120	105		
	VISITORS			96	1.92	2.4	1.536	3.936				
3	SALE	44	5	220	19.8	9.9	29.7	25.74	30	24		
	VISITORS			22	0.44	0.55	0.99	0.90				
	<b>Total</b>	<b>1136</b>	<b>-</b>	<b>6248</b>	<b>522.56</b>	<b>269.8</b>	<b>740.976</b>	<b>687.846</b>	<b>-</b>	<b>619</b>	<b>13</b>	<b>336</b>
	<b>Domestic water requirement (CMD) = 523</b>											
	<b>Flushing water requirement (CMD) = 270</b>											
	<b>Total Water requirement (CMD) = 741</b>											
	<b>Waste water generation (CMD) = 689</b>											
	<b>STP CAPACITY = 3 STP of 550, 120 &amp; 30 capacity each for SRA, MHADA &amp; SALE Building respectively</b>											
	<b>RECYCLED WATER FROM STP (90% OF TOTAL STP CAPACITY) (CUM/DAY) = 619</b>											
	<b>RECYCLED WATER AVAILABLE FOR LANDSCAPE IRRIGATION REQUIREMENT (CUM/DAY) (2670 sqm area @ 5 lit./sqm) = 13</b>											
	<b>SURPLUS WATER AVAILABLE = 336 CMD</b>											

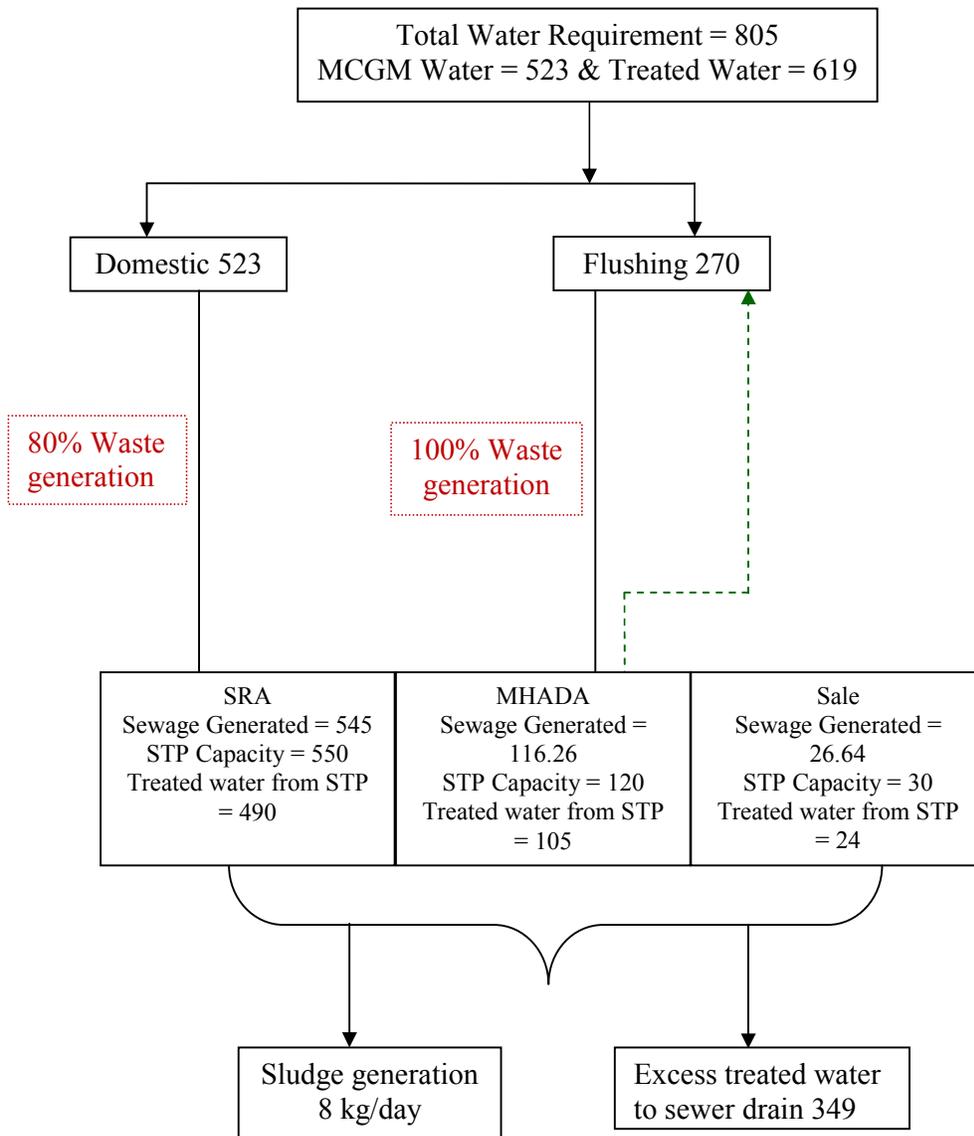
**FIGURE – 2: WATER BALANCE – For SRA, MHADA & Sale Building (Non Monsoon Season)**



Note: All values are in CMD

**Figure 1.6A: Water Balance for Non Monsoon season**

**FIGURE – 3: WATER BALANCE for SRA, MHADA & Sale Building (Monsoon Season)**

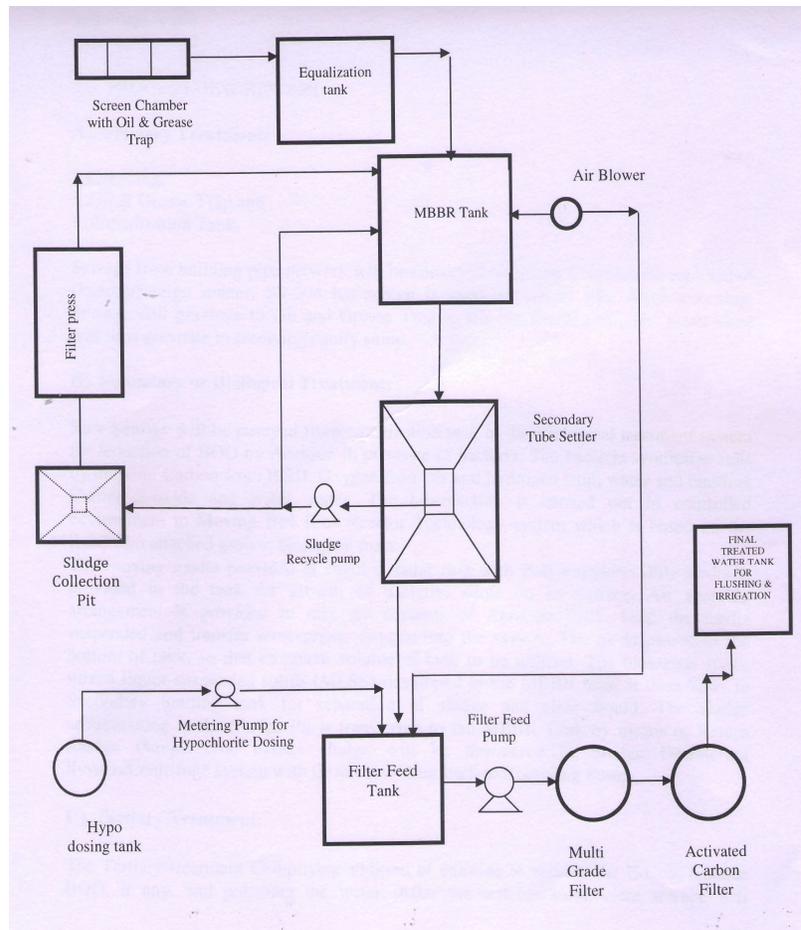


Note: All values are in CMD

**Figure 1.6B: Water Balance for Monsoon season**

**Sewage Treatment Plant (STP) for Wastewater Management:**

It is proposed to treat the sewage water in STP system based on **Moving Bed Bio Reactor (MBBR)** not only to reduce the level of pollution in the waste water to the limits specified by the Pollution Control Board but also make it suitable for use in Flushing and Horticulture after the necessary tertiary treatment. MBBR flow sheet is given below in Figure 1.7.



**Figure 1.7: MBBR FLOW SHEET**

**3.2 SOLID WASTE GENERATION AND MITIGATION MEASURES**

**Construction stage**

During the construction stage, construction waste would be generated which would include debris, concrete, steel and other metals, bricks, pallets, packaging and paper products, railings, door and window casings, fixtures, tiles, furnishings etc.

**Operation stage**

During operation phase, solid waste will be generated @ 0.45 Kg/day for residential purposes. The details of solid waste generated during operation phase are given in Table 1.6.

The main solid waste generated from the proposed project is due to consumption of food materials, plastic, packing material and paper. The solid waste will be segregate at the site and recyclable material will be sold out through vendors. Biodegradable waste would be transferred to mechanical composting units within the premises and rest will be disposed off into the garbage collecting vehicles of the local authorities.

**Proposed method for Solid Waste Management**

<b>Sr. No.</b>	<b>Waste Type</b>	<b>Collection and Storage</b>	<b>Method of Disposal</b>
1.	organic waste	Manual collection & storage at ground level.	Treatment in Mechanical composting units provided at the ground level within the premises. The manure generated will be used for gardening.
2.	Inorganic waste	Manual collection & storage in closed rooms at ambient temperature.	Disposed to the Municipal waste collection system and recyclable waste to be taken away by private contractor for resale.

**Table 1.6: Solid Waste Generated during Operation Phase**

Sr. No.	DESCRIPTION	No. of Flats	No of people per flat	Total No of People	Quantity of refuse Kg/person/day	Total Solid waste Generated (Kg/Day)	Bio-degradable waste generated @55% of total waste (Kg/Day)	Non-Biodegradable waste generated @45% of total waste (Kg/Day)
1	SRA	900	5	4500	0.45	2025	1113.75	911.25
2	Visitor	-	-	450	0.1	45	24.75	20.25
3	MHADA	192	5	960	0.45	432	237.60	194.40
4	Visitor	-	-	96	0.1	9.6	5.28	4.32
5	SALE	44	5	220	0.45	99	54.45	44.55
6	Visitor	-	-	22	0.1	2.2	1.2	0.99
	<b>TOTAL</b>	<b>1136</b>		<b>6248</b>		2612.60	1436.93	1175.67
						2.6 MT/D	1.4 MT/D	1.1 MT/D

## Proposed method for Solid Waste Management

Mechanical-composting process and organic waste converter can be used for this purpose.

The specifications of the mechanical-composting unit (Organic Waste Converter) are as follows:

Sr No	Description Tower	Input	Organic waste Quantity (Kg/Day)	OWC Model	Capacity (Kg/ Batch)	Total Batch	Batch Time	Power (HP)	Dimension (M)
(1)	(2)	(3)	(4)	(5)	(6)	(7)=(4) / (6)	(8)	(9)	(10)
1	SRA Building	Segregated organic waste	1138.5	OWC 500	170	7	10 to 15	16	2.03 X 1.37 X 1.65
2	MHADA Building	Segregated organic waste	242.88	OWC 60	25	10	10 to 15	4	1.74 x 1.06 x 1.1
3	SALE Building	Segregated organic waste	55.55	OWC 30	10	6	10 to 15	2.5	1.65 x 1.03 x 0.98

### Single Curing System

- Capacity: 100 Kg a day
- Size: 365 x 120 x 255 cm
- Automatic fogging system

### Organic Waste Converter – Waste Flow Chart

The schematic representation for the processes in the organic waste converter i.e. the Waste Flow chart:

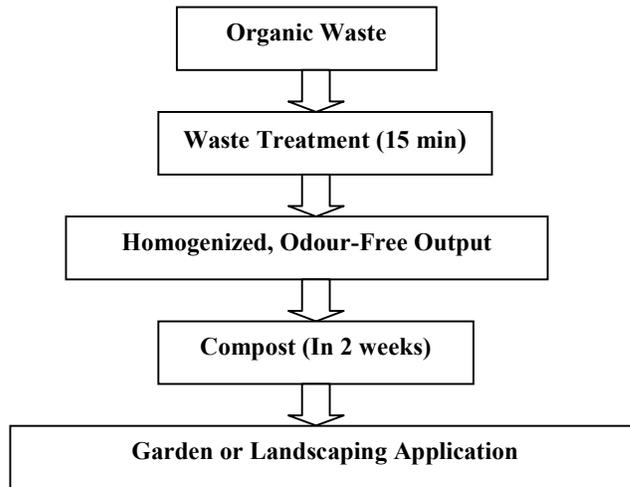


Figure 1.8: Representation of OWC Machine





Figure 1.9: Representation of Curing System

### 3.3 POWER REQUIREMENT

#### During Construction Phase:

Power required for the general purpose will be approx. 200 KW & shall be taken from Local Authority from the existing connection.

#### During Operational Phase:

**Source of Power** – Reliance Energy.

#### Connected Load-

Operation Phase:

- For SRA:- 1388 KW
- For MHADA:- 698.38 KW
- For Sale:- 697.96 KW

**DG Back up** –DG set with Acoustic enclosures and with synchronizing Panel

For SRA, MHADA & Sale building 3 No. DG set of 400 KVA, 240 KVA, 240 KVA capacities respectively. The same will be operated for essential power requirements such as fire lifts, water pumps and passage lighting etc. As in Mumbai there is hardly any power failure is observed, but for essential back up DG set is proposed.

The building will have following energy saving measures

- External lighting is proposed on solar.
- The upper Saleable Flats will be provided with solar geysers.

### **3.4 AIR & NOISE POLLUTION & CONTROL MEASURES**

The sources of air & noise pollution are D. G. sets and vehicular movement and honking. By implementing appropriate mitigation measures these effects are expected to become insignificant.

### **3.5 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 pits provided for this purpose. The overflow from these pits, if any, will be then discharged in the proposed drains. The storm water calculations, design of Storm water Drain and Surface Runoff Prior to Construction for proposed project is given below:

### **3.6 FIRE FIGHTING MEASURES**

For protection of the facility against fire, all the units will be equipped with any one or a combination of the following fire fighting systems:

- Hydrant system;
- Smoke detector, and smoke alarm system
- Fire Detection and alarm system; and
- Different types of fire extinguishers.
- Provision of refuge area

- Precautions will be taken as per NBC & C.F.O NOC

For storage of water for fire fighting in case of emergency, a firewater underground sump will be provided. This will serve the fire fighting needs of the project.

#### 4.0 ENVIRONMENTAL MONITORING PROGRAMME

##### 4.1 Environmental Monitoring

The Post Project Monitoring to be carried out at the project site will be as mentioned below:

###### ➤ Air Pollution and Meteorological Aspects

Both ambient air quality and stack emissions shall be monitored. The ambient air quality shall be monitored once in three months by engaging the services of the laboratory approved by SPCB/MoEF.

###### ➤ Wastewater Quality

The wastewater generated from sanitation shall be monitored once in a month for physico-chemical characteristics and results reported to SPCB. The treated water from STP shall be monitored once in a month for physico-chemical characteristics and results.

###### ➤ Noise Levels

Noise levels shall be monitored once in three months.

#### Environmental Monitoring Plan

During Construction Phase				
	Item	Parameters	Frequency	Location
1.	Ambient Air Quality	SPM,RSPM,SO <sub>2</sub> NOX , HC & CO	Quarterly	At major construction area. ( total 1 station )
2.	Noise Level	Equivalent noise Level dB (A)	Daily	At major construction area. ( total 1 station )
3.	Drinking Water	Analysis of water for physical, chemical, biological parameters.	Quarterly	Municipal supply
During Operation Phase				
	Item	Parameters	Frequency	Location
1.	Ambient Air Quality	SPM,RSPM,SO <sub>2</sub> NOX , HC & CO	Quarterly	Total 1 station
2.	Noise Level	Equivalent noise Level dB (A)	Quarterly	Total 1 station

3.	Drinking Water	Analysis of water for physical, chemical, biological parameters	Quarterly	Municipal supply
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### 5.0 Environment 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.

#### Safety Measures Onsite

- 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 5.0 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 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.

## 6.0 Additional Studies

### Disaster Management Plan

This provision is applicable in the present case only to safety and fire hazard because it is a small residential unit. The only hazards envisaged here are from fire either due to short circuit or gas cylinder in the kitchen of individual houses. There are no other manmade disasters expected. We have not considered here the natural disasters like flooding, earth quake etc.

Normal safety plans and precautions are expected to be in place as per CFO and MCGM guidelines. To maintain the ecological balance and check any probable harmful effect, proper EMP, good housekeeping around project site, have been suggested.

The fire safety measures followed will be:

- Underground and overhead water storage tank
- Exit sign & Emergency escape route sign shall be provided
- Fire pumps, Sprinkler pumps with jockey pumps to be provided
- Diesel driven standby pump
- Pressurized wet risers at mid-landing in the duct adjoining each staircase with hydrant outlet and hose reel on each floor
- Portable extinguisher and bucket filled with sand shall be kept in Electric meter room, Lift machine room and entire parking.
- Automatic smoke detection & Fire alarm system
- Provision of Refuge Area
- Fire escape staircases, fire lift & fire safety doors as per DC Regulations and in the line with NBC 2005

The Disaster Management Plan studies include:

- Identification of the major hazards to people and the environment;
- Assessment of the risks
- Develop warning system wherever possible
- Develop manpower and measures to prevent / control the risks
- Make advance preparations to face the disaster, minimize the losses, provide help to affected people
- Planning to recover from the effects of the hazard.

## **7.0 LANDSCAPING AND GREENBELT DEVELOPMENT**

Adequate land will be available for open spaces and other non-building purposes approx. 2670 sq. m. area will be taken for green cover / lawn development in the proposed facility. Suitable plant species of local varieties will be planted with adequate spacing and density for their fast growth and survival.

## **8.0 PROJECT BENEFITS**

The project proponent seems to be safety conscious and alert about good housekeeping and is environment friendly. We may conclude as under:

- Proposed Redevelopment project is in Worli area of Mumbai. The site under reference is affected by CRZ-II zone. Thus property attracts the CRZ legislation, which is reflected in CZMP plan.
- The proponents are following all the Firefighting safety rules and regulations as prescribed by M.C.G.M. and CFO regulations.
- Building will be designed to meet requirements of seismic zone III-Earthquake resistant.
- Rain water harvesting system is proposed on site.
- 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 segregated and kept separately for wet and dry garbage. Dry garbage will be sorted into recyclable and non recyclable. Recyclable dry garbage will be disposed to authorized recycling agencies and non recyclable will be sent to land fill sites by the municipality. Wet garbage will be treated by Organic waste converter and will be used as manure in garden area.
- Air, water, Noise, soil parameters will be studied during construction as well as after construction to minimize the environmental impact by taking proper precautionary measures.
- No significant impact is seen on flora and fauna.
- Fly-ash will be used in concrete work.
- Total 134 trees will be planted along with landscape development to improve microclimate.

- The project will generate employment opportunities during construction stage and also at operational phase.
- Proposed buildings have considered energy efficient lighting.