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. 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.

1.1 PREAMBLE

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. On the other hand that there are thousands of ageing buildings which are dilapidated and have reached a stage where it is not possible to carry out structural repairs and rehabilitation as the same are not economically viable. The redevelopment of cess dilapidated building has become a necessity since the problem of old and dilapidated buildings in the city of Mumbai grows more acute with each passing year and with each passing monsoon more and more building become dangerous and unfit for habitation. Hence, M/s Sea Link Realtors has identified business possibility in this field to provide space for accommodation. They have identified 2 dilapidated buildings for redevelopment namely Fair Field Building & Silver Sand CHS Ltd.

1.2 NEED OF PROJECT

Many buildings collapse each year, killing or injuring people. Many of these buildings are so run down that they are unrepairable and the only solution is to put them down totally and to reconstruct them. Government has floated various schemes wherein they have allowed incentive FSI for carrying out redevelopment schemes. Proposed redevelopment thus will help the existing tenants to get permanent, safe structure. At present they are residing in old building.

As per MCGM – Notice under section 353(B) of the Mumbai Municipal Corporation Act Notice No: - ACGN/WEE/762/AEBF-II/Date:- 21/5/2014 states Fair Field building is in dilapidated condition. As per MCGM Vide Letter WOGN/25/-/AE(B.F) of 2005 – 06 dated 23.06.2005 the building named Silver Sand CHS Ltd. is in dangerous condition and is likely to fall down at any time, particularly during rain. The photographs of Fair Field Building are given in Figure 1.1A and photographs of Silver Sand CHS Ltd. are given in Figure 1.1B respectively.

In accordance to with the earlier D.C. Regulation 33(7) and Appendix – III to this regulation 33(7) as the above mentioned property is affected by CRZ as per Govt. of India Notification issued under No.SO-114(E) of 19.02.1991 Coastal Regulation Zone Notification 2011 issued under SO. 19(E) dated 06.01.2011 and Office Memorandum issued by MCZMA, Environment Department, Government of Maharashtra dated 02.07.2011, Notification No. TPB 4308/3224/CR-268/08/UD-11 dated 2nd March 2009. The proposed project needs to obtain prior permission from Maharashtra Coastal Zone Management Authority (MCZMA) for redevelopment.

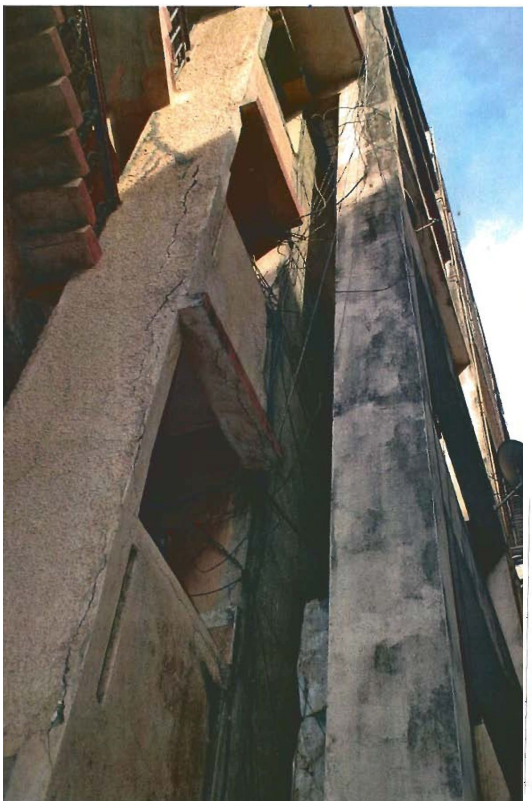

Figure 1.1A: Photographs of Fair Field CHS

Figure 1.1B: Photographs of Silver Sand CHS Ltd.

1.3 APPLICABILITY OF CRZ NOTIFICATION 2011

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). 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.

1.4 IDENTIFICATION OF PROJECT PROPONENT

M/s Sea Link Realtors has proposed redevelopment of a residential building on subjected land. The details of the project proponent are given in Table1.1.

Table-1.1: Details of Contact Person

Sr. No.	Particular	Details
1	Name of Developer	M/s Sea Link Realtors
2	Name of Contact person	Mr. Vinit Ajgaonkar
3.	Designation of Contact person	Partner
4.	Contact No	09821367830
5.	Email	vinit@shivalikventures.com
6.	Address	M/s Sea Link Realtors Unit 1201, 12th Floor, Tower B, Peninsular Business Park, Ganpatrao Kadam Marg, Lower Parel, Mumbai 400 018

1.5 LOCATION OF THE PROJECT

The proposed project admeasuring about 1934.70 sq. m. of plot area is situated on F. P. No. 184 of Mahim Division in G/N Ward at Veer Savarkar Marg, Mumbai 400 016. The Google image of the proposed site is given in Figure 1.2 and Location of Proposed Project on CZMP Map is given in Figure 1.3.

Figure 1.2 Location of Proposed Project on Google Image

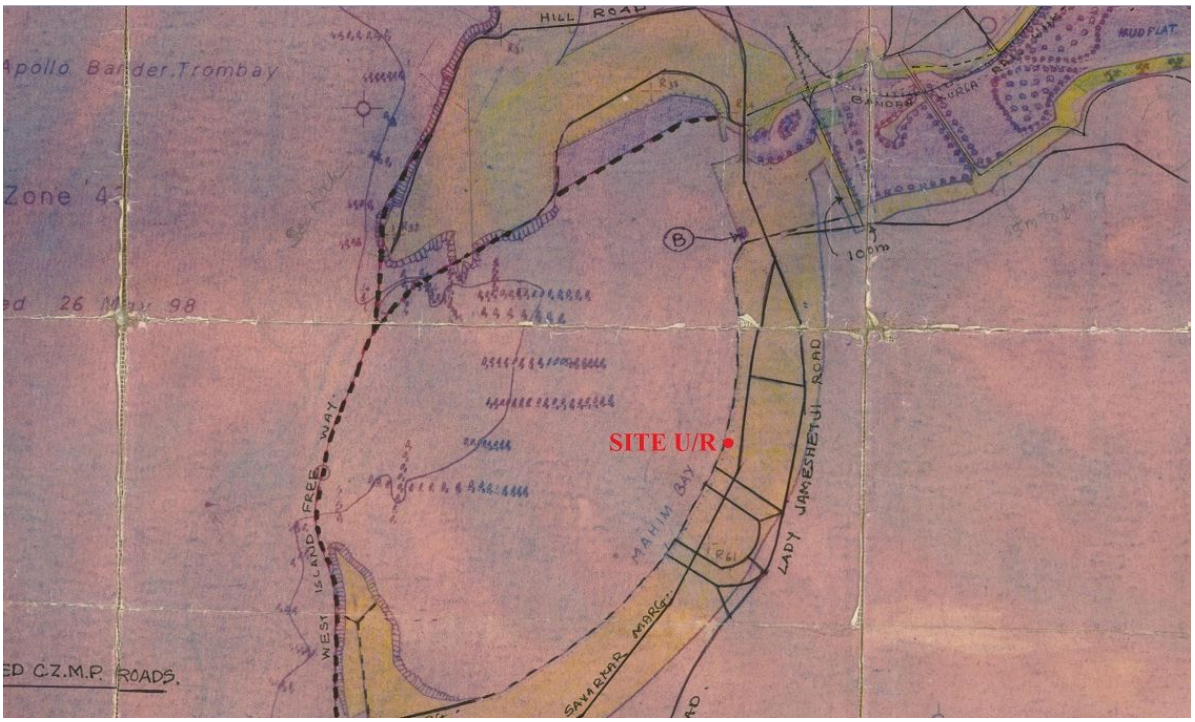

Figure 1.3: Showing Location of Proposed Project on CZMP Map

1.6 DESCRIPTION OF PROJECT SITE

The proposed project has existing access road from Swatantrya Veer Savarkar Marg at Mahim. 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	19^0 01'58.21" N
2	Longitude	72^0 50'15.14" E
3	Elevation above MSL	18.0 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	Swatantrya Veer Savarkar Marg
B	Nearest Railway Station	Mahim Railway Station (2.1km – NNE)
C	Nearest Road	Swatantrya Veer Savarkar Marg PN Kotnis Road
7	Social Aspect	
A	Nearest School/College	Lokmanya Vidya Mandir English Primary School (240 m- E) Bombay Scottish School (300 m – N) Lokmanya Vidya Mandir (1.0 km - E) St Michael High School (1.3 km -N)
B	Nearest Hospital	P. D. Hinduja Hospital (200 m - S) New Ratna Hospital (290 m - N) Raj Ratan Hospital & Dr. Johari's Nursing Home (450 m – N)
C	Nearest Fire Station	Shivaji Park Fire Station (800 m - E)
D	Nearest Police Station	Mahim Police Chowky (1.2 Km – NE) Shivaji Park Police Station (2.0 Km – SE)
8	Hills/Valleys	Nil
9	Ecologically sensitive zones within 15-km distance	CRZ - II
10	Seismic Zone	Zone – III

1.7 PROJECT LAYOUT

The proposed project is a redevelopment project which comprises of Basement + Stilt Level + 1^{st} to 34^{th} Upper Residential Floor including Fire Check Floor + Service Floor. In addition to main building a parking tower of height 65 Mt. The plan showing the location plan, block plan and Layout Plan of the proposed project are shown in Figure 1.4, 1.5 and 1.6 respectively.

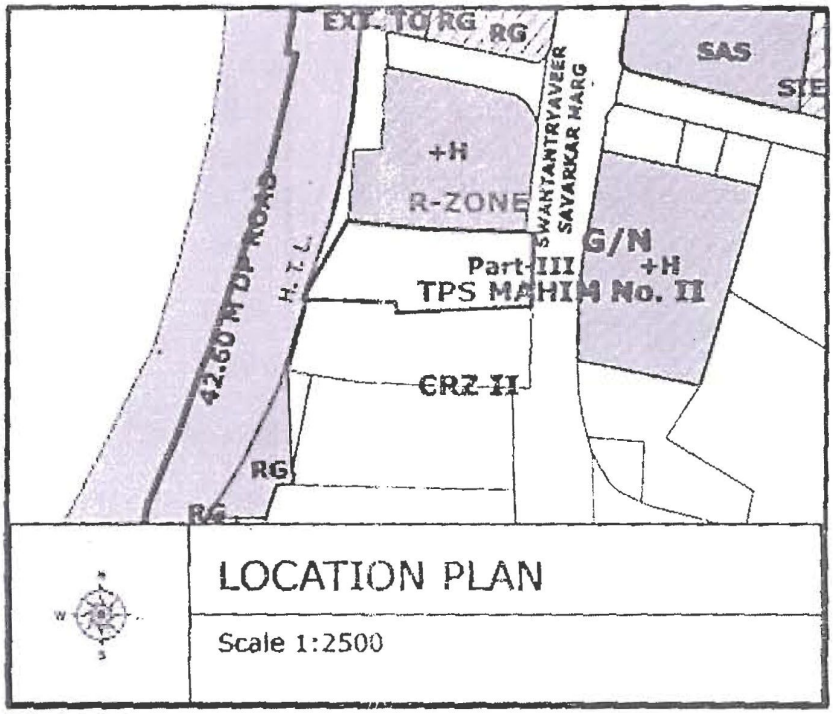

Figure 1.4: Location Plan of the Proposed Site

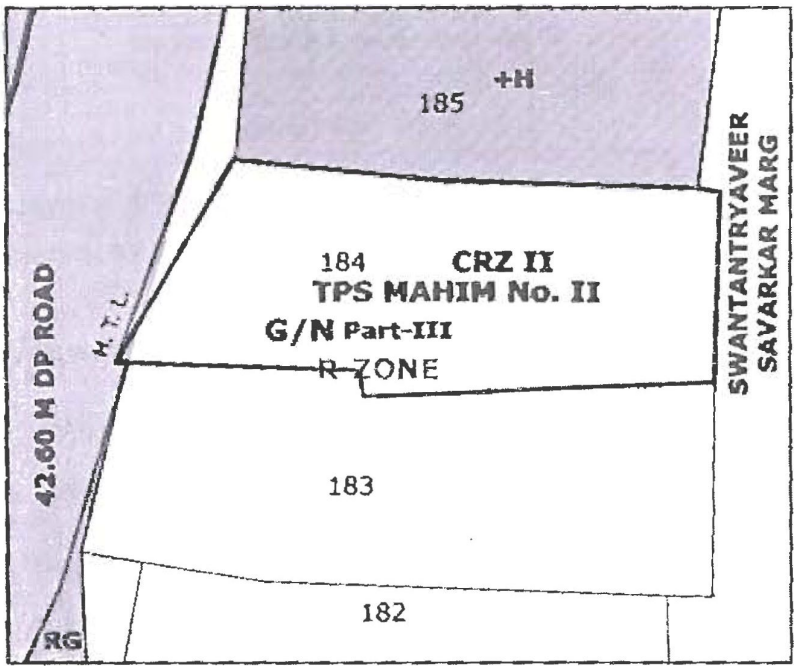

Figure 1.5: Block Plan of the Proposed Site

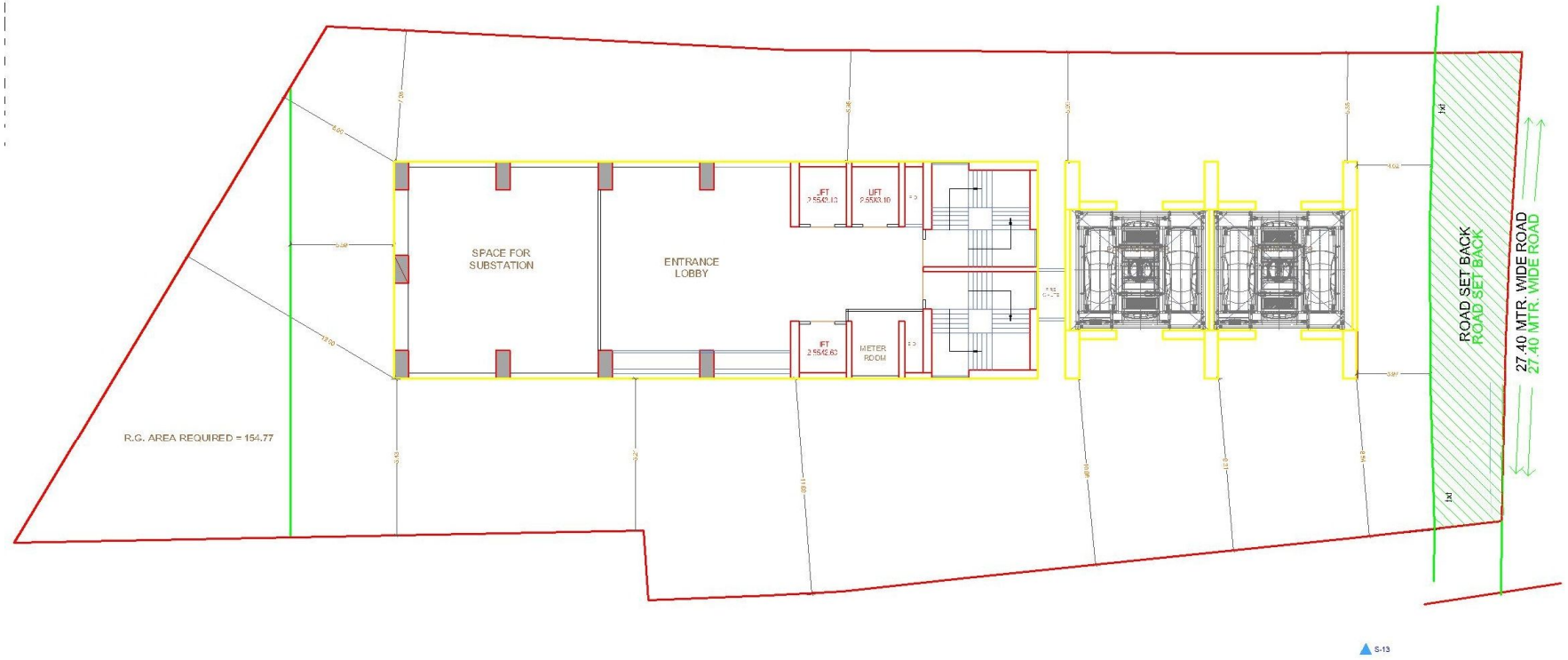

Figure 1.6: Layout Plan of Proposed Building

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	F. P. No. 184
	Village	TPS II – Mahim Division
	Tehsil	Dadar
	District	Mumbai
	State	Maharashtra
3	Site fall under CRZ I/II/III	CRZ - II
4	Distance of proposed building from HTL	20 m (approx.)
5	Proposed Plot Area	1934.70 sq. m
6	Permissible FSI	1.33/3
7	Permissible BUA	7218.90 sq. m
9	Total Construction area	13100.00 sq. m
10	No of Building	1
11	Configuration of proposed Buildings	Basement + Stilt Level + 1st to 34th Upper Residential Floor including Fire Check Floor + Service Floor. In addition to main building a parking tower of height 65 Mt.
12	Population	210 Nos. (Residents)
13	Water	
a	Source	MCGM
b	Total water requirement	28 KLD
c	Total sewer generation	26 KLD
d	Mode Of Disposal	Excess wastewater to Municipal Sewer line after treatment in Grey water Recycling Unit.
14	Solid Waste Generation	Total Solid waste: 84 kg/day Biodegradable Waste: 50 Kg/day Non-Biodegradable Waste: 34 Kg/day
	Mode of Disposal	Handed over to Municipal Corporation Vehicle
16	Power	
a	Requirement	Maximum Demand: 1737.63 KVA
b	Source	B. E. S. T
17	Project cost	9125 Lakhs
18	Parking Details	Parking Provided: 112 Nos.

2.0 DESCRIPTION OF THE ENVIRONMENT

2.1 METEOROLOGICAL

Relative Humidity	***Temperature***	***Rainfall***
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_2	19.0 – 29.0	$\mu g/m^3$
NO_x	26.5 – 42.0	$\mu g/m^3$
RSPM	78.0 – 168.0	$\mu g/m^3$

2.3 NOISE LEVEL

Day Time Noise Levels [(L_{day})]

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

Night Time Noise Levels (L_{night})

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^2
G/N	Mahim	9.07 Sq. Km	11812.18 Apporx.	590609 Approx.	59060.9 Approx.

Source: http://www.mcgm.gov.in/irj/portal/anonymous/qlwardgn

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 50 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	--
	Total		**50**	**8**

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. The details of Water Requirement and Waste generation during Operation Phase are given in Table 1.5. Water Balance is given in figure 1.6 respectively.

Table 1.5: Water Requirement during Operation Phase

Purpose	Quantity (CMD)
Total water requirement	28
Domestic water requirement	19
Flushing water requirement	9
Landscape Water Requirement	0.8
Total sewage generation	26
Treated water	16

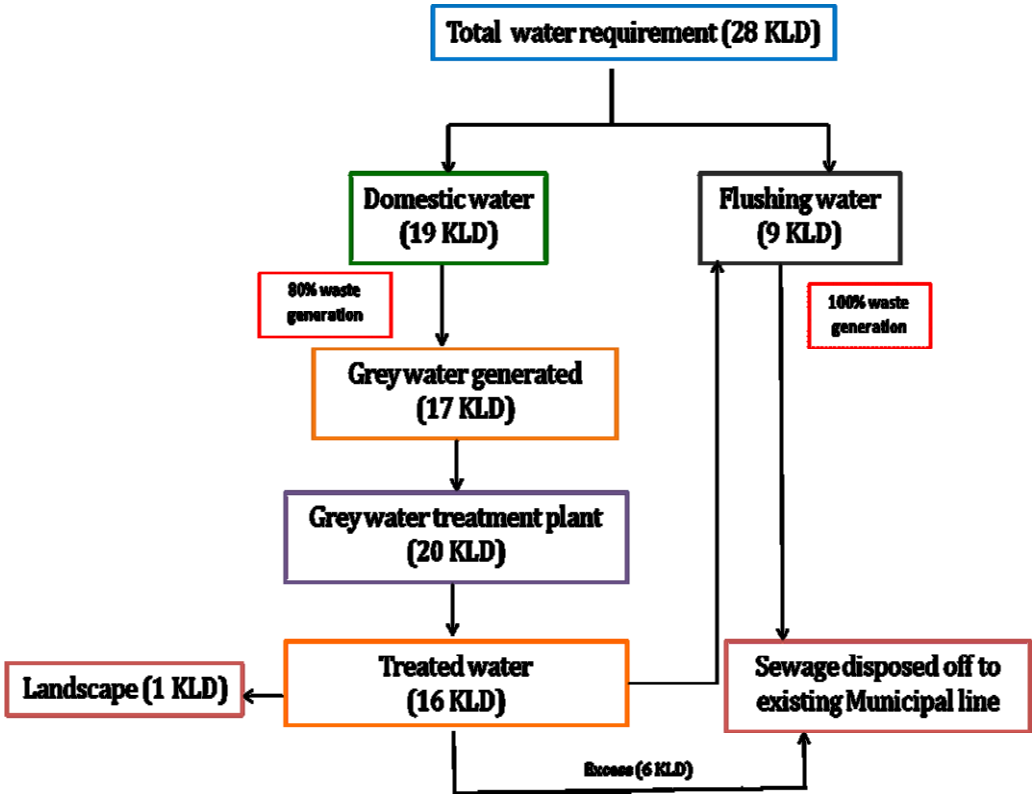

Figure 1.6: Water Balance

Grey water treatment shall be carried out in the proposed project. As per calculation, 20 KLD Grey Water Treatment Plant shall be proposed. Treated Grey water can be used for gardening and flushing purpose. Excess of treated water will be discharged into Municipal Sewer line.

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 @ 0.4 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

Sr. No.	Waste Type	Collection and Storage	Method of Disposal
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

	Quantity (Kg/Day)
Total Solid waste generated (@0.4 Kg/Person/Day)	84
Bio-degradable waste generated @60% of total waste	50
Non-Biodegradable waste generated @40% of total waste	34

3.3 POWER REQUIREMENT

During Construction Phase:

Power required for the general purpose will be approx. 100 KW & shall be taken from Local Authority from the existing connection.

During Operational Phase:

For the proposed high rise building, the average electrical load consumption per day is ***1737.63 KVA*** while the average annual consumption is ***634235 KVA***.

Transformers will be as per BEST Norms.

DG set of ***630 KVA*** capacity has been proposed. The same will be operated for essential power requirements such as fire lifts, water pumps and passage lighting etc. **DG Back up** – DG set with Acoustic enclosures and with AMF Panel.

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.

The building will have following energy saving measures

- External lighting is proposed on solar.
- Light fixtures will be used with energy saving CFL & T5 fluorescent tube with electronic chocks.
- Selection of Energy efficient equipments (BEE STAR RATED).
- All vertical fenestration will be as per ECBC

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 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_2 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	Analysis of water for physical, chemical,	Quarterly	Municipal supply

	Water	biological parameters.		
During Operation Phase				
	Item	**Parameters**	**Frequency**	**Location**
1.	Ambient Air Quality	SPM,RSPM,SO_2 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

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
- 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. 154.77 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 Mahim 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.
- Grey water Recycling Plant is proposed for treatment of Grey water generated from proposed project. Black water generated from proposed project will be directly connected to the existing Municipal sewer line.
- 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 8 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.