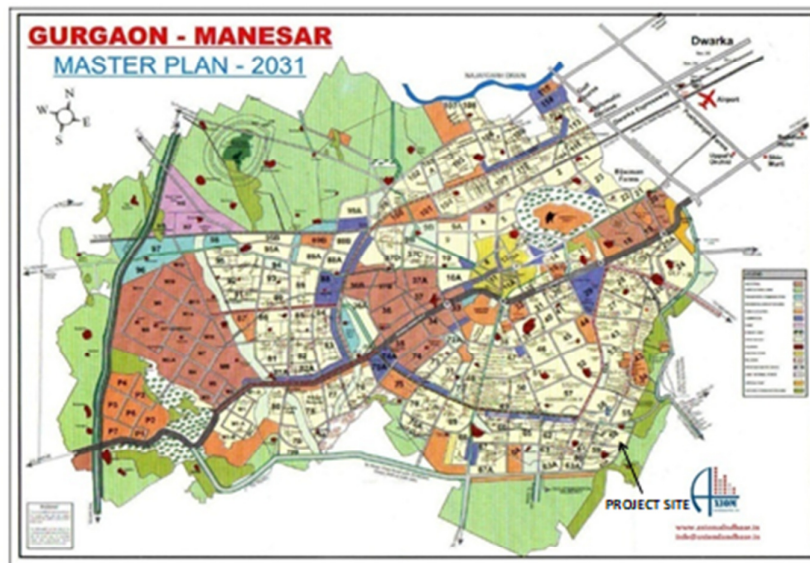


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## 1.0 INTRODUCTION

M/s Metro Infocity Realtors Pvt. Ltd is one of the leading real estate developers executing various projects under various stages of development and execution. They have rich experience in the field of real estate and with their creative, innovative ideas and world class technologies; they have completed many residential, commercial and education complex. In continuation of the same and considering the emerging demand of commercial facilities in District Gurgaon, M/s Metro Infocity Realtors Pvt. Ltd has Proposed IT/Cyber Park colony over an area 24.97 Acres at Village- Behrampur & Balola, Gurgaon, Haryana.



**Fig 1: Master Plan Gurgaon**

## 2.0 PROJECT DETAILS

The proposed project is planned on a total Plot area of 1,01,049.845 sq m to be constructed at village- Behrampur & Balola, Gurugram. The total builtup area will be 4,63,997.752 sq m.

The design approach shall be sensitive to environmental issues. The main thrust shall be laid on energy conservation, safety and ease of maintenance and current technological development. The Design Philosophy is to ensure fulfillment of all functional requirements in accordance with Design Guidelines, Relevant Standards and Codes as well as local Bye laws.

The following design standards/guidelines with latest amendments shall be followed during detailed design of services. In case of any discrepancy, the stringent shall be followed:

- National Building Code of India – 2016.

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- Relevant Codes of National Fire Codes
- Relevant Codes of Bureau of Indian Standards
- Energy Conservation Building Codes 2017
- Indian Electricity Rules 1956
- Environmental Guidelines.
- State Byelaws.

The project area statement and its components are as per the table 1 details given below:

**Table1.Area Statement for proposed project**

PROJECT SUMMARY			
Sl. No.	Description	Quantity	Unit
<b>GENERAL</b>			
1	Gross Plot Area	101049.845	SQMT
2	Proposed Built Up Area	463997.752	SQMT
3	Max No of Floors	3B+G+17	No.
4	Expected Population (7766 All Floating)	27780	No.
5	Cost of Project	1102.79	CR
<b>AREAS</b>			
6	Permissible Ground Coverage Area (40%)	40419.94	SQMT
7	Proposed Ground Coverage Area (18.49%)	18661.39	SQMT
8	Permissible FAR Area	249593.12	SQMT
9	Proposed FAR Area (246.6)	249250.07	SQMT
10	Proposed Non FAR area (Mumty Machine Rm etc.)	49182.93	SQMT
11	Non FAR areas - Basement Area	165564.75	SQMT
12	Proposed Total Built Up Area	463997.75	SQMT
<b>WATER</b>			
13	Total Water Requirement	1853.52	KLD
14	Fresh water requirement	510.13	KLD
15	Treated Water Requirement	1343.39	KLD
<b>PARKING</b>			
16	Total Parking Required as / Building Bye Laws	6231	ECS
17	Proposed Total Parking	6741	ECS
<b>GREEN AREA</b>			
18	Required Green Area (15% of plot area)	15157.477	SQMT
19	Proposed Green Area (24.23% of plot area)	24484.599	SQMT
<b>WASTE</b>			
20	Total Solid Waste Generation	6.48	TPD
21	Organic waste	2.61	TPD
22	Quantity of E-Waste Generation- Kg/Day	0.00	KG/DAY
23	Quantity of Hazardous waste Generation	40.01	LPD
24	Quantity of Sludge Generated from STP	392	KG/DAY
<b>ENERGY</b>			
25	Total Power Requirement	24000	KW
26	DG set backup	30000	KVA

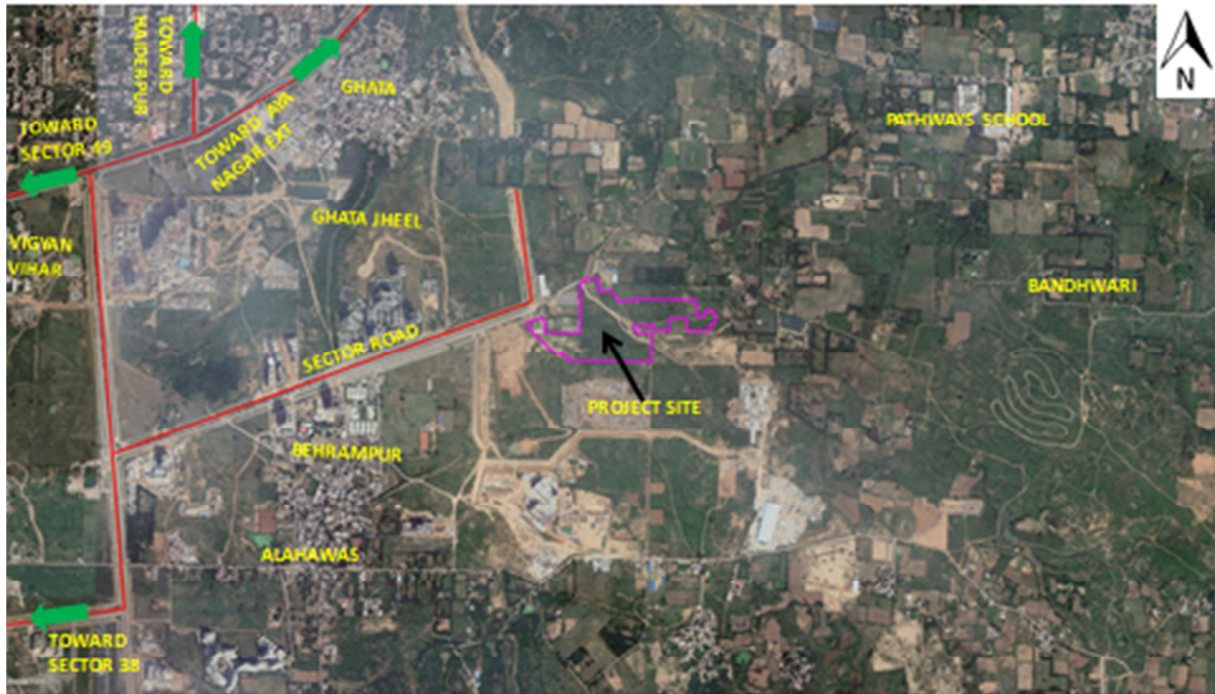
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### 3.0 CONNECTIVITY

The sector roads are well connected to the major roads. The site is located at the distance of 8.29 km, NW from NH-236, 7.65 km, SW from SH-13, 9.03 km, S from SH-15A and 9.14 KM, NE from NH-8. Almost all the surrounding areas and nearby villages are well connected through road network.

**Fig 1: Project site Location**

### PROJECT SITE LOCATION ON GOOGLE EARTH



28°24'46.50" N, 77°07'16.68" E

**Fig 2: 10 km radius map**



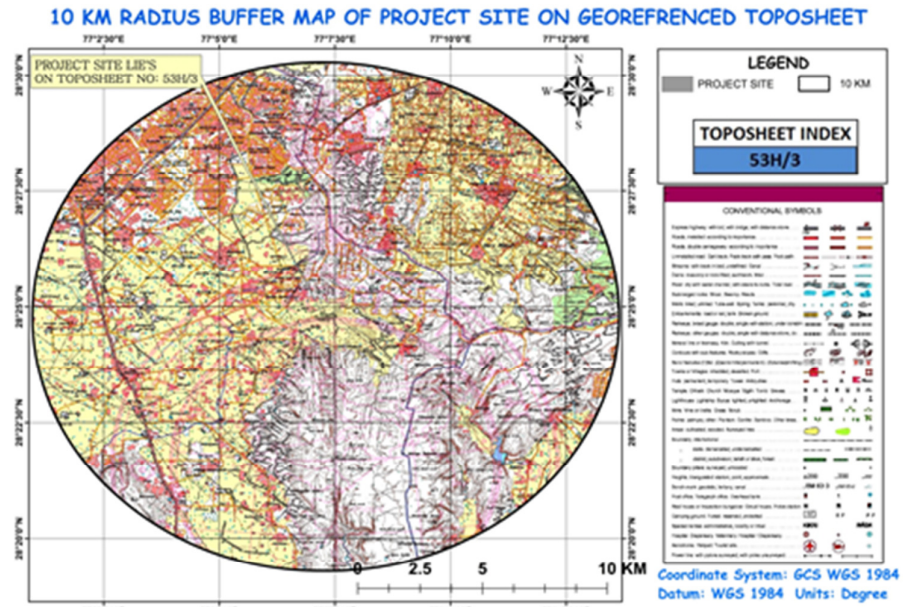
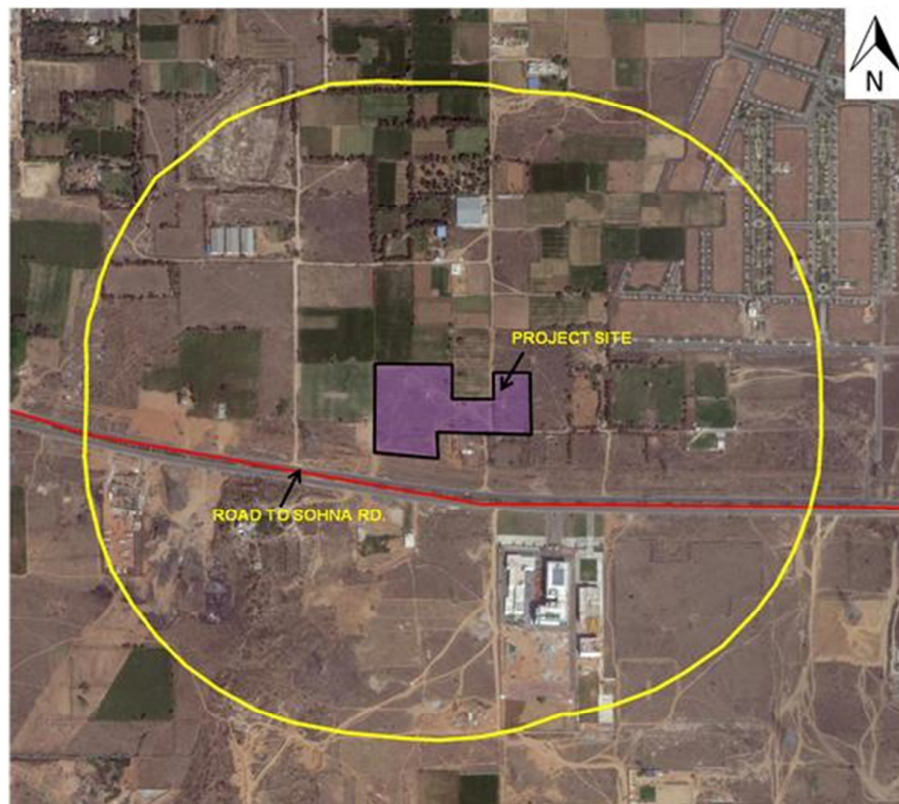


Fig 3: 500 m radius map



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#### 4.0 PROJECT SURROUNDINGS

Proposed IT/Cyber Park colony over an area 24.97 Acres at Village- Behrampur & Balola, Gurgaon, Haryana. Project site is at 28°24'46.50" N to 77°07'16.68" E. (Source: Survey of India). The details of site surroundings are given below in Table-2.

**Table-2: Site and Surrounding of the project Site**

S. No.	Particulars	Details
1.	Nearest National Highway	NH-236: 8.29 km, NW NH8: 9.14 KM, NE
2.	Nearest Railway Station	Gurgaon Railway Station: 13.48 km, W
3.	Nearest Airport	Indira Gandhi International Airport: 13.64 KM, NW
4.	Nearest Town/ City	Gurgaon city, 10.31 km, NW
5.	River Body	Damdama lake: 11.84 km, S
6.	Hills/ Valleys	8.18 Km in NW direction
7.	Site Topography	Plain
8.	Archaeologically Important Site	Qutub Minar: 13.60 km, NE
9.	National Parks/ Wildlife Sanctuaries	Aravali Bio-diversity Park: 7.50 km, NW
10	Delhi State Boundary	2.89 km NW
12.	Seismicity	The study area falls under Seismic Zone-IV

10 km radius surroundings of the project site and 500 m radius are given above in Fig 2 and Fig 3 respectively

#### 5.0 OCCUPANCY DETAILS

The population of the proposed project will be **27780** persons (25287 Non Residential + 2493 floating).

#### 6.0 WATER DEMAND

##### 6.1 Water supply & source

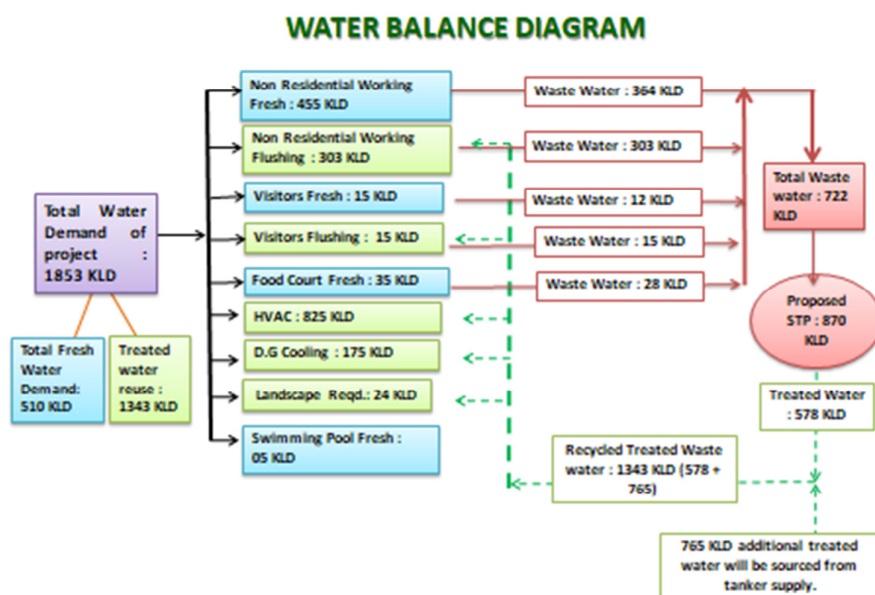
The water supply for the project during operation phase will be sourced from HUDA. The total water requirement based on the population will be **1854 KLD**. The daily water requirement calculation for proposed project and waste water generation and reuse details are provided in **table 4** and the water balance Diagram is given below in **Figure-5**.

WATER REQUIREMENT			
	POPULATION/ AREA/UNIT	RATE IN LTS	TOTAL QTY IN KL
<b>NON RESIDENTIAL (Working)</b>			

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DOMESTIC	25287	18	455.17
FLUSHING	25287	12	303.45
<b>VISITORS</b>			
DOMESTIC	2493	6	14.96
FLUSHING	2493	6	14.96
<b>TOTAL POPULATION</b>	<b>27780</b>		
	Area in sqm		
GARDENING	24484.60	1	24.48
	KVA		
AIR CONDITIONING	8250	10	825.00
D G COOLING	32500	0.9	175.50
FOOD COURT	500	70	35
WATER BODY/SWIMMING POOL	1		5
<b>TOTAL WATER REQUIREMENT</b>			<b>1853.52</b>

**Table 4: Calculations for Daily Water Demand for proposed project**



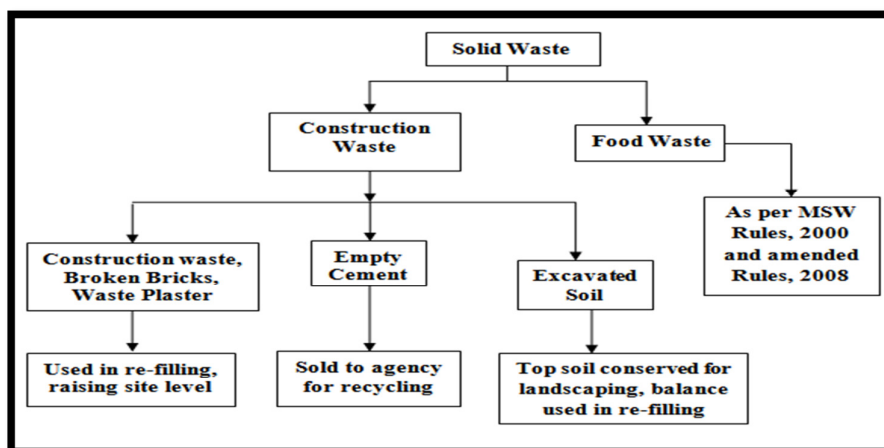
**Fig 5: Water Balance Diagram**

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## 7.0 SOLID WASTE GENERATION, COLLECTION, TRANSPORT AND DISPOSAL

Solid waste would be generated both during the construction as well as during the operation phase. The solid waste expected to be generated during the construction phase will comprise of excavated materials, used bags, bricks, concrete, MS rods, tiles, wood etc. The following steps are to be followed for the management solid waste:

- Construction yards are used for storage of construction materials.
- The excavated material such as topsoil and stones will be stacked for reuse during later stages of construction.
- Excavated top soil will be stored in temporary constructed soil bank and will be reused for landscaping of the Commercial Project.
- Remaining soil shall be utilized for refilling / road work / rising of site level at locations/ selling to outside agency for construction of roads etc.



**Figure 6: Solid Waste Management Scheme (Construction Phase)**

Following the guidelines of Central Public Health and Environmental Engineering Organization (CPHEEO) manual, quantity of solid waste generated will be 1.33 TPD (@ 0.50 kg per capita per day for residents. Green area and landscape wastes generated have been considered @ 15 kg/acre/day).

**Table 5: Quantity of Waste Generation for Group Housing**

Total Waste Generation	6.48	TPD
Organic Waste Generation	2.61	TPD
Sludge Generation	392	KG/Day
Hazardous Waste Generation (DG Waste Oil)	40.01	Lts/ Day

NB: The solid waste generation has been calculated @ 0.5 per capita per day basis. Following arrangements will be made at the site in accordance to Solid Wastes (Management and Handling) Rules, 2000 and amended Rules, 2016.

### ❖ Collection and Segregation of waste

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1. The local vendors will be hired to provide separate colored bins for dry recyclables and Bio-Degradable waste.
2. For adequate number of colored bins (Green and Blue & dark grey bins–separate for Bio-degradable and Non Bio-degradable) are to be provided at the strategic locations of the commercial area.
3. Litter bin will also be provided in open areas like parks etc.

## 8.0 POWER REQUIREMENT DETAILS

The power supply shall be supplied by Dakshin Haryana Bijli Vitran Nigam Limited (DHBVNL) the connected load for the project will be approx. 24000 KW.

**Table: 6 Power Demand**

ELECTRICAL - DEMAND LOAD	24000	KW
POWER BACK UP - DG SETS	30000	KVA

### 8.1 Backup Power Details

There is provision of DG sets of 30000 KVA for power back up in the proposed project. The DG sets will be equipped with acoustic enclosure to minimize noise generation and adequate stack height for proper dispersion.

#### **Energy Conservation Measures:**

The energy conservation measures shall be adopted to minimize the demand on non- renewable resources and maximize the utilization efficiency of these resources. The benefits of Energy Conservation measures are as follows:

Project will comply ECBC norms and all energy conservation measures proposed in ECBC. Project will also comply HAREDA norms for SPV plant requirement on project site.

## 9.0 CONSTRUCTION OF STORM WATER DRAINS

A network of storm water drain will be all along the direction along the main roads and cross roads of suitable area size (minimum size would be 0.5m X 0.3m X 0.3m). All storm water drains will be covered with RC slabs so as to prevent the entry of soil and dust. Storm water collected through storm water drains will be discharged into Municipal Storm Water Drains. Storm water drains will be constructed on both edges of roads.

## 10.0 LANDSCAPE & SHELTERBELT DEVELOPMENT

Total green area measures 24484.599 m<sup>2</sup> i.e. **24.23%** of the total plot area will be under tree plantation within the plots along the roads. There are several trees which will be planted along the sides of the Project boundary. Trees that are to be planted in the project premises are given below in below:



**The list of evergreen, shady, ornamental and flowering  
Trees for green belt development**

**List of Trees**

S.No.	Botanical Name	Common Name	Type
1	<i>Acacia auriculiformis</i>	Dalthoth	Evergreen/Flowering
2	<i>Alstoniascholaris</i>	Scholar Tree	Evergreen
3	<i>Anthocephaluscadamba</i>	Kadamb	Deciduous/ Flowering
4	<i>Azadirachtaindica</i>	Neem	Deciduous
5	<i>Bassialatifolia</i>	Mahua	Deciduous/ Flowering
6	<i>Bauhinia variegated</i>	Kachnar	Deciduous/ Flowering
7	<i>Bauhniapurpurea</i>	Orchid Tree	Deciduous/ Flowering
8	<i>Bombaxmalabaricum</i>	Semul	Deciduous/ Flowering
9	<i>Caryotaurens</i>	Fish Tail Palm	Evergreen
10	<i>Callistemon lanceolatus</i>	Bottle brush	Evergreen/ Flowering
11	<i>Cassia fistula</i>	Amaltas	Deciduous/ Flowering
12	<i>Casurinaequisetifolia</i>		Evergreen
13	<i>Chorisia speciosa</i>		Deciduous/ Flowering
14	<i>Dalbergiasissoo</i>	Shisham	Deciduous
15	<i>Delonix regia</i>	Gulmohar	Deciduous/ Flowering
16	<i>Erythrina indica</i>		Deciduous/ Flowering
17	<i>Ficus benjamina</i>	Weeping fig	Evergreen
18	<i>Ficus infectoria</i>	Pilkhan, White Fig	Evergreen
19	<i>Gravellia robusta</i>	silver oak	Evergreen
20	<i>Jacaranda mimosifolia</i>	Neeli Gulmohar	Deciduous/ Flowering
21	<i>Neodypsis decaryi</i>	Triangle Palm	Evergreen
22	<i>Peltophorum ferrugineum</i>	Copper Pod	Deciduous/ Flowering
23	<i>Pheonix dactylifera</i>	Date Palm	Evergreen
24	<i>Polyalthia longifolia</i>	Ashok	Evergreen
25	<i>Roystonea regia</i>	Royal Palm	Evergreen
26	<i>Schleicheratrijuga</i>	Kusum	Deciduous/ Flowering
27	<i>Sterculia alata</i>	Buddha Coconut	Deciduous/ Flowering
28	<i>Tamirindus indica</i>	Imly	Deciduous
29	<i>Terminalia arjuna</i>	Arjun	Deciduous

**List of Shrubs**

1	<i>Caesalpinnaepulcherrima</i>	Dwarf Gulmohur	Evergreen/ Flowering
2	<i>Cassia biflora</i>		Deciduous/ Flowering
3	<i>Cassia angustifolia</i>		Deciduous/ Flowering
4	<i>Cassia glauca</i>		Deciduous/ Flowering
5	<i>Clerodendron inerne</i>		Evergreen
6	<i>Ficus danielle</i>		Evergreen
7	<i>Ficus panda</i>		Evergreen
8	<i>Gardenia jasminoides</i>		Evergreen/ Flowering
9	<i>Hamelia patens</i>		Evergreen/ Flowering
10	<i>Hibiscus hirsute</i>		Deciduous/ Flowering
11	<i>Lantana camaradepressa</i>		Evergreen/ Flowering
12	<i>Lantana sellowiana</i>		Evergreen/ Flowering
13	<i>Lagerstoremia indica</i>		Deciduous/ Flowering
14	<i>Murraya exotica</i>		Evergreen/ Flowering
15	<i>Nerium indicum</i>		Evergreen/ Flowering
16	<i>Nyctantes- arbor tritis</i>	Harsingar	Deciduous/ Flowering
17	<i>Plumeria alba</i>	Champa	Evergreen/ Flowering
18	<i>Tabernaemontana coronaria</i>		Evergreen/ Flowering
19	<i>Tecomaria capensis</i>		Evergreen/ Flowering
20	<i>Tecomagaudichaudi</i>		Evergreen/ Flowering
21	<i>Thevtianerifolia</i>		Evergreen/ Flowering

**List of Climbers**

1	<i>Bougainvillea sp.</i>		Evergreen/ Flowering
2	<i>Clerodendrum thompsonae</i>		Evergreen/ Flowering
3	<i>Chlerodendrum splendens</i>		Evergreen/ Flowering
4	<i>Ficus pumila</i>	Indian ivy	Evergreen

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5	<i>Pyrostgiavenustata</i>		Deciduous/ Flowering
6	<i>Quisqualisindica</i>	Madhumalti	Evergreen/ Flowering
<b>List of Groundcovers</b>			
1	<i>Asparagus sprengerei</i>		Evergreen
2	<i>Chlorophytum</i>		Evergreen
3	<i>Dianellatasmanica</i>		Evergreen
4	<i>Iresineherbistii</i>	LalSaag	Evergreen
5	<i>Ophiopogonjaponicus</i>		Evergreen
6	<i>Pedilanthustithymaloides</i>		Evergreen
7	<i>Rhoeo discolor</i>		Evergreen
8	<i>Setcreaseapurpurea</i>		Evergreen/ Flowering
9	<i>Syngoniumpodophyllum</i>		Evergreen
10	<i>Wedeliaatilobata</i>		Evergreen/ Flowering

## 11.0 PARKING FACILITIES

Adequate provision will be made for parking at the proposed commercial colony. There shall also be adequate parking provisions for visitors so as not to disturb the traffic and allow smooth movement at the site.

### 11.1 Parking Details

**Table: 8**

1	Parking Required as/Byelaws	6231	ECS
2	Parking proposed	6741	ECS

## 12.0 SEISMICITY

Based on the tectonic features and records of earthquake, a Seismic Zoning map has been developed for the country by Bureau of Indian Standard (BIS). The area under study falls in Seismic Zone-IV. Suitable seismic coefficients in horizontal and vertical directions respectively, will be adopted while designing the structures. Earthquake resistant construction material will be used.

## 13.0 EMERGENCY LIGHTING

The emergency lights operated on battery power should be provided at appropriate locations – such as corridors, common area, staircase, exit and entrance doors, parking, etc. The transformers will be kept energized and should feed independently alternate rows of lights so that in case of failure of one transformer, there will not be complete darkness.

## 14.0 FIRESAFETY

- Fire Fighting Designed: As per National Building Code 2016/guideline of Dist fire department.
- Fire Tender route with access to each block.
- Fire escape staircases as per NBC requirements.

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- Fire Alarm system
- Sand buckets will be placed on each floor of convenient shopping.

## **15.0 ENVIRONMENTAL POLLUTION MITIGATION MEASURES**

### **15.1 Air Pollution**

Increased traffic generation due to project (6741 Nos.) of parking space proposed for the project is not going to cause significant increase in atmospheric concentration of gases and will not result in heat island formation as adequate landscaping has been provided.

#### **Mitigation Measures for Air Pollution during Construction Stage**

Air quality around the project site will be impacted during construction stage. Various construction activities especially related to handling of loose material are likely to generate fugitive dust that will affect the air quality of the surrounding area of the project site. To minimize such impacts following measures has been proposed:

- All the loose material either stacked or transported will be provided with suitable covering such as tarpaulin, etc.
- Water sprinkling shall be done at the locations where dust generation is anticipated.
- To minimize the occupational health hazard, proper personal protective gears i.e. mask shall be provided to the workers who are engaged in dust generation activity.

#### **Mitigation Measures for Air Pollution during Operational Stage**

Operation of DG Sets is the only source of air pollution during operational phase. Sufficient stack height will be provided for proper dispersion of pollutants. Also, it is proposed to minimize air pollution by providing plantation as buffer on the periphery of the project site and on the open spaces. An area of **24484.599 m<sup>2</sup> i.e. 24.23%** of the total area has been kept for plantation purposes.

### **15.2 Water Pollution**

The source of water pollution during construction and operation phase is due to waste water generated from toilets and washing.

#### **Mitigation Measures for Water Pollution during Operational Stage:**

Waste water generation and treatment and reuse are dealt in 6.1.

### **15.3 Noise Environment**

It is envisaged that within the proposed project there shall be maximum movement of light motor vehicles like cars and 2-wheelers which will lead to some increase in noise levels. It is proposed to minimize the noise levels by providing plantation as buffer on the sides of internal roads, on the open spaces inside and around the periphery of whole complex. Proper maintenance of the internal roads will also be carried out and Informatory signboards shall be provided to encourage vehicle owners to maintain their vehicle, not to blow horns and follow the emission standards fixed by Government Authorities.

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DG sets will be kept in the acoustic chamber and ambient noise will be within the CPCB standard limits.

#### **Mitigation Measures for Noise Pollution during Construction Stage**

During the construction stage, expected noise levels shall be in the range of 80-85 dB (A) which will decrease with increase in distance as per the Inverse Square Law. Administrative as well as engineering control of noise will be implemented. Isolation of noise generation sources and temporal differentiation of noise generating activities will ensure minimum noise at receiver's end. To prevent any occupational hazard, ear muff / ear plug shall be given to the workers working around or operating plant and machinery emitting high noise levels. Use of such plant or machinery shall not be allowed during night hour. Careful planning of machinery operation and scheduling of operations shall be done to minimize such impact.

#### **Mitigation Measures for Noise Pollution during Operation Stage**

It is envisaged that there shall be maximum movement of light motor vehicles like cars and 2-wheelers which will lead to some increase in noise levels. It is proposed to minimize the noise levels by providing plantation as buffer on the open spaces and around the periphery of whole complex. Informatory signboards shall be provided to encourage vehicle owners to maintain their vehicle, not to blow horns and follow the emission standards fixed by Government Authorities

DG sets will be kept in the acoustic chamber and ambient noise will be within the CPCB standard limits.

### **16.0 CONSTRUCTION MATERIALS**

The following construction materials are required for residential construction;

1. Coarse sand	11. P.V.C. conduit
2. Fine sand	12. MCBs/DBs
3. Stone aggregate	13. PVC overhead water tanks
4. Cement	14. Pavors
5. Fly Ash	15. GI pipe
6. Reinforcement steel	16. waste water lines
7. Plywood & steel shuttering	17. S.W. sewer line upto main sewer
8. Pipe scaffolding (cup lock system)	18. PVC pipes
9. Bricks	19. Glass
10. Marble	20. Joinery hardware

Apart from this, in order reduce the overall energy requirement of the building; materials with low U value will be used.

### **17.0 LIST OF MACHINERY USED DURING CONSTRUCTION**

- (i) Dumper
- (ii) Concrete mixer with hopper
- (iii) Excavator
- (iv) DG Sets
- (v) Cranes
- (vi) Road roller
- (vii) Bulldozer
- (viii) Tower Cranes



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- (ix) Hoist
- (x) Labor Lifts
- (xi) Concrete pressure pumps
- (xii) Mobile transit mixer