

CONCEPTUAL PLAN

1. INTRODUCTION

Bihar Medical Services and Infrastructure Corporation Limited (BMSICL) is proposed Construction of 630 bedded “Lohia Medical College & Hospital” on the total land area measuring **110883.87 Sqm.** at Dist. – Supaul, State-Bihar. The proposed built up area is **165476.93 Sqm.**

The Project built up area is greater than 1,50,000 sqm. Therefore, designated under Category “B” and falls under Item 8 (b) (Township & Area development Project) of the Environmental Impact Assessment (EIA) Notification of September 14, 2006 and its subsequent amendments. The Land details is attached as **Annexure-III.**

2. SITE SURROUNDING & CONNECTIVITY

The proposed project is well connected to different villages and towns. It is surrounded by Pipra Debipatti, Dinapatti habitation. Site surroundings and Connectivity details of the proposed project are given in **Table-1.**

Table-1: Site Surroundings and Connectivity Details

Connectivity & Site Surroundings			
S. No.	Description		Distance and Direction
1.	Nearest Junction Nearest Railway Station	Supaul Railway Station Tharbitia Railway Station	Approx.19.0 Km towards South-West. Approx.14.0 Km towards WNW.
2.	Nearest Airport	Darbhanga Airport	Approx. 86.0 km towards West.
3.	Nearest Village	Pipra Debipatti Dinapatti	Approx. 1.14 Km towards East. Approx. 0.34 Km towards North. Approx. 0.97 Km towards South-West.
4.	Nearest Highway/Roads	Debipatti Main Road NH- 327 NH- 131	Approx. 0.67 km towards West Approx. 0.48 km. towards South. Approx. 1.15 km towards East.

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5.	Nearest School & College	Middle School, Dinapatti Primary School, Kamalpur B.D.M Boarding School	Approx. 1.26 Km towards South-West. Approx. 1.13 Km towards NE. Approx. 1.05 Km towards East.
6.	Nearest Hospital	Prathmik Swasthya Kendra, Pipra Thumha Hospital	Approx. 1.09 Km towards ESE. Approx. 4.10 Km towards WSW.
7.	Places of worship	Hanuman Temple, Debipatti Shiv Temple	Approx. 0.61 Km towards NNW. Approx. 1.0 Km towards East.
8.	Water Bodies	Tilabeh Nadi Koshi River	Approx. 3.30 Km towards West. Approx. 15.50 Km towards WNW.
9.	Nearest Town	Supaul	Approx. 18.50 Km towards West

Source: Google Earth & Site visit

The Site Location map is shown in **Figure-1**. A Google Map showing the site corner coordinates of the proposed project is shown in **Figure-2**. Topographical map (*Survey of India Topo sheet no No.-(72J12, 72J16)* of 10 km radius is shown in **Figure 3**.

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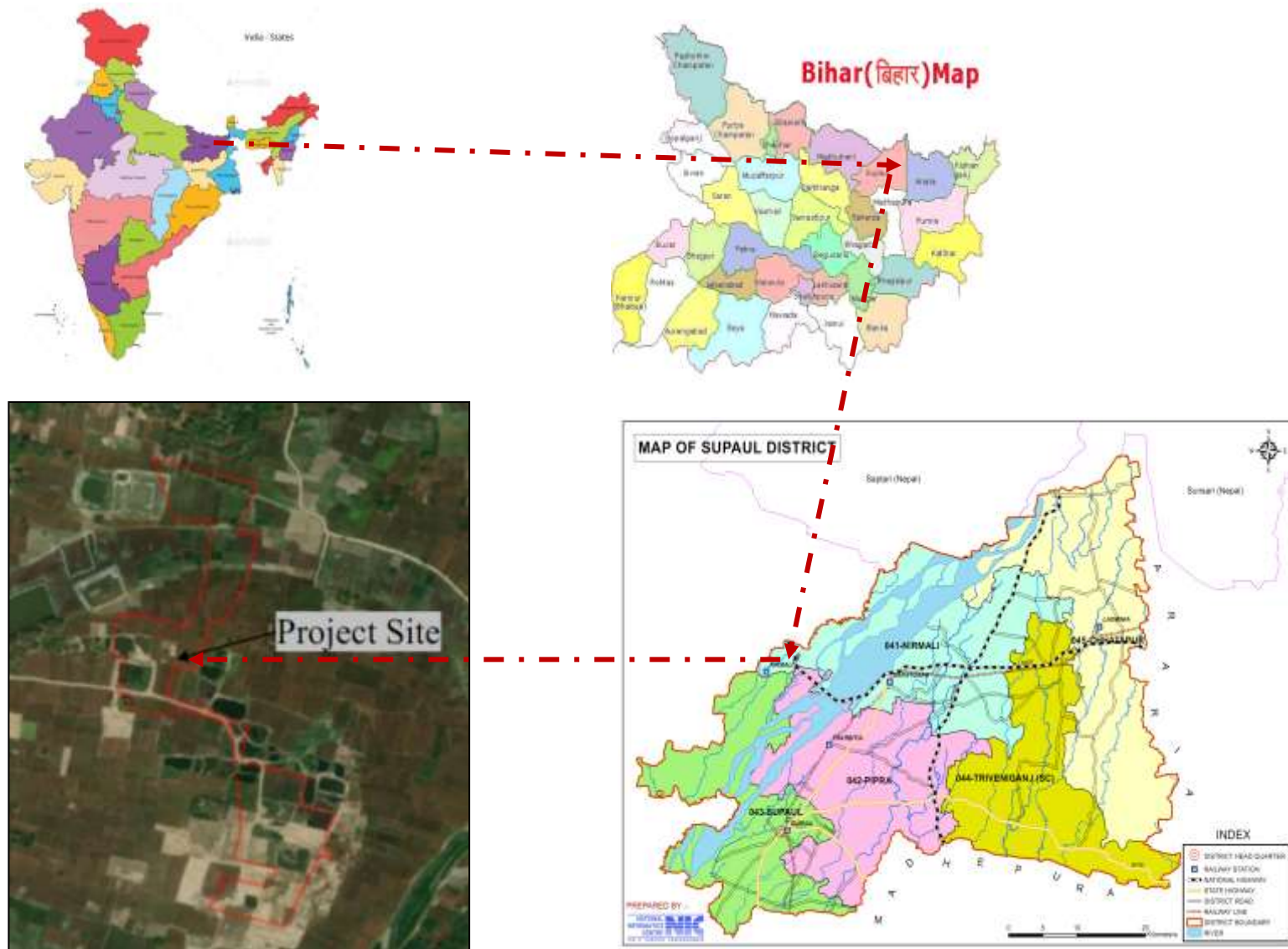
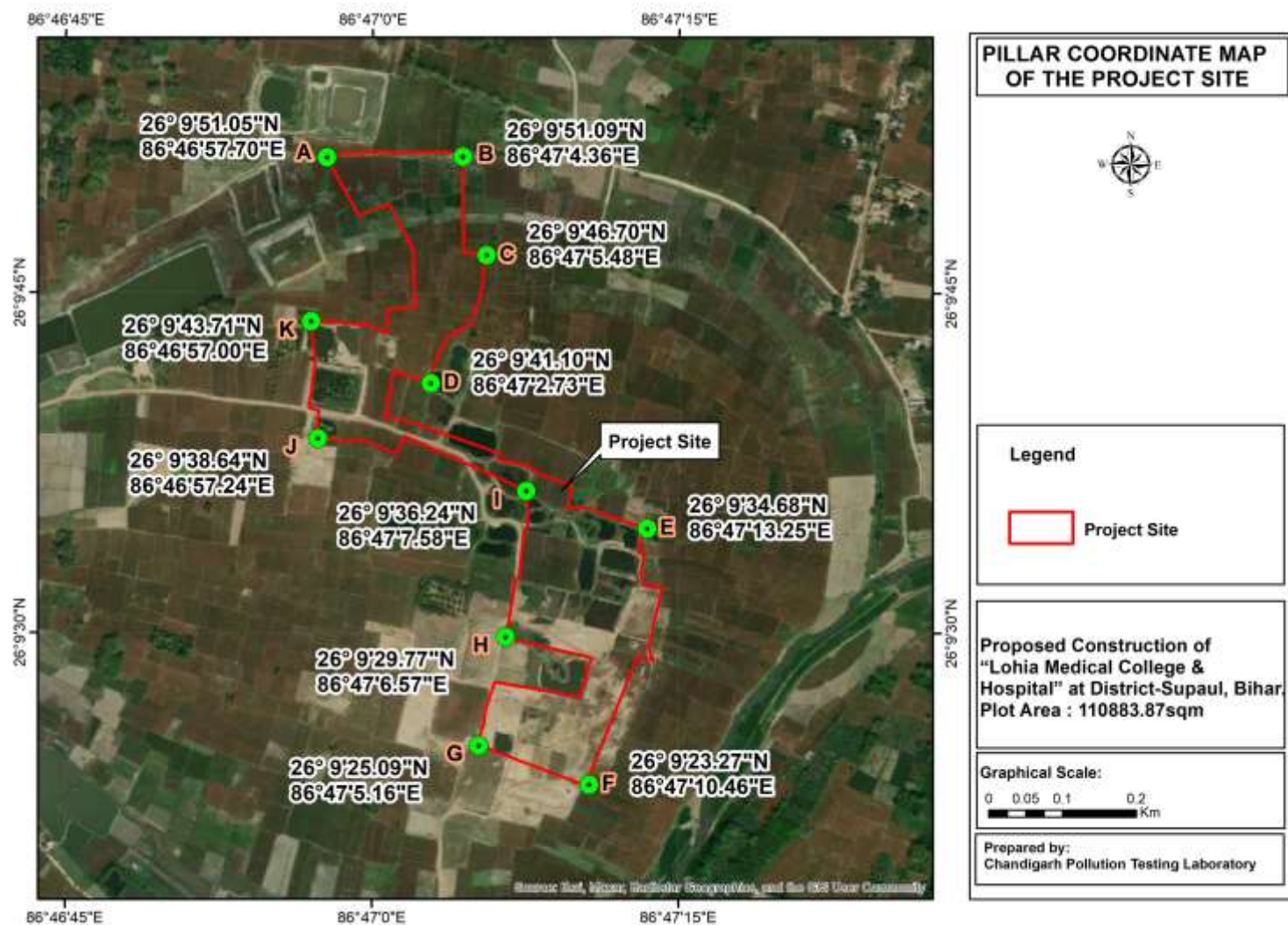


Figure-1: Site Location Map

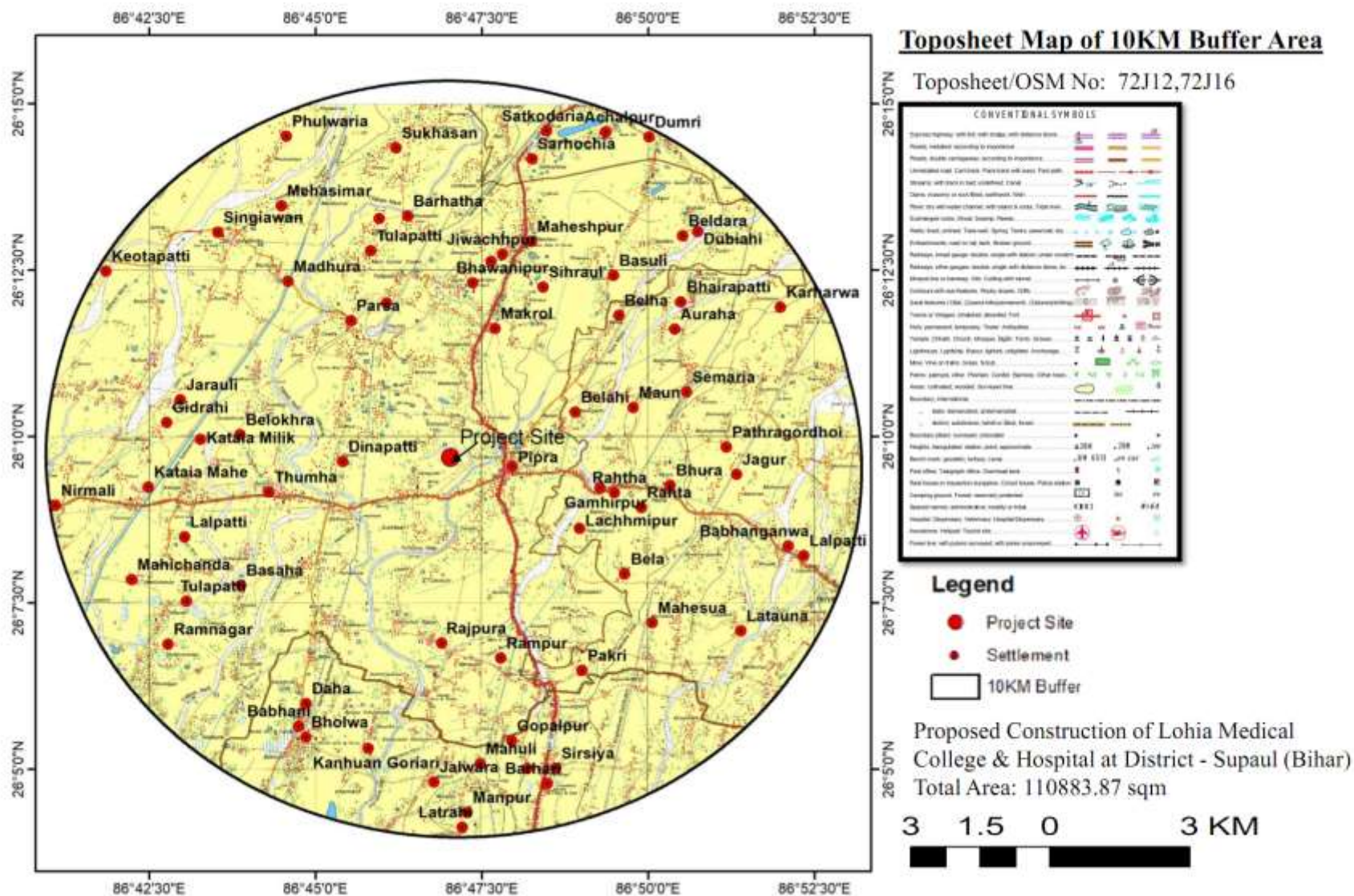
Proposed Construction of “Lohia Medical College & Hospital” at District-Supaul, Bihar



Source: Google Map

Figure-2: Pillar Coordinate Map

Proposed Construction of “Lohia Medical College & Hospital” at District-Supaul, Bihar



Source: Survey of India

Figure 3: Topographical Map of 10 km radius

3. PROJECT LOCATION AND DESCRIPTION

The Proposed Construction of 630 bedded “Lohia Medical College & Hospital” at District-Supaul, Bihar . The coordinates of the project boundary are mentioned below in the **Table-2**.

Table-2: Coordinates of the Project Boundary

Sl. No.	Latitude	Longitude
1.	26°9'51.05"N	86°46'57.70"E
2.	26°9'51.09"N	86°47'4.36"E
3.	26°9'46.70"N	86°47'5.48"E
4.	26°9'41.10"N	86°47'2.73"E
5.	26°9'34.68"N	86°47'13.25"E
6.	26°9'23.27"N	86°47'10.46"E
7.	26°9'25.09"N	86°47'5.16"E
8.	26°9'29.77"N	86°47'6.57"E
9.	26°9'36.24"N	86°47'7.58"E
10.	26°9'38.64"N	86°46'57.24"E
11.	26°9'43.71"N	86°46'57.00"E

The detailed area statement is given below in **Table-3**.

Table-3: Detailed Area Statement

S. No.	Particulars	Area (Sqm.)
1	Plot Area	110883.87
2	Proposed FAR @ 1.49	165476.93
3	Hospital Blocks	54846.85
4	College Blocks	23529.58
5	Hostel Blocks	39589.96
6	Residential Blocks	23643.27
7	Others (Indoor Sport Complex, Service Block, Multilevel Car Parking, ESS, STP UGT)	23867.27
8	Total Built-up Area	165476.93
9	Multilevel Car Parking	12881.8
10	Ground (Open) Parking	2257.2
11	Ground Floor Parking (Resident Block)	4488.61
12	Total Parkig Provided	11234.42
13	Proposed Ground Coverage @ 27.90 %	30937.03
14	Green area @ 27.89%	30928.71
15	Road Area	24280.99
16	Paved Area	17829.93
17	Pathway	4650.01

4. DETAIL OF BUILDING BLOCK

The Project envisages construction of five blocks. Details of Building Blocks are given in **Table 4.**

Table 4: Details of Building Blocks

S. NO.	NAME OF THE BUILDING BLOCKS		
		TOTAL AREA (IN SQ.MT.)	HEIGHT OF BUILDING
A	HOSPITAL BLOCKS		
	H1-H1A BLOCK	11986.79	G+6
	H2 BLOCK	7925	G+6
	H3 BLOCK	10205.02	G+6
	H4 BLOCK	10205.02	G+6
	H5 BLOCK	10205.02	G+6
	CONNECTING BRIDGE OF HOSPITAL BLOCKS	4320	G+6
B	COLLEGE BLOCKS		

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1	COLLEGE BLOCK-	23529.58	G+4
C	HOSPITAL BLOCKS		
1	INTERN HOSTEL-FEMALE	3347.09	G+4
2	INTERN HOSTEL-MALE	4661.31	G+6
3	BOYS HOSTEL - 1	5184.93	G+7
4	BOYS HOSTEL - 2	5184.93	
5	GIRLS HOSTEL -1	3908.89	G+5
6	GIRLS HOSTEL -2	3908.89	
7	STAFF NURSE'S HOSTEL	3148.26	G+5
8	JUNIOR RESIDENCE HOSTEL	5103.36	G+4
9	SENIOR RESIDENCE HOSTEL	5142.3	G+7
D	RESIDENT BLOCKS		
1	PRINCIPAL RESIDENCE	413.51	G+1
2	MEDICAL SUPERINTENDENT RESIDENCE	413.51	G+1
3	PROFESSOR RESIDENCE	6896.5	G+7
		6896.5	
4	NON-MEDICAL STAFF QUARTER	7442.72	G+6
5	KARMCHARI QUARTER	1580.53	G+3
E	BLOCKS		
1	INDOOR SPORTS COMPLEX	3190.47	G+3
2	SERVICE BLOCK-1 (HOSPITAL)	5335.00	G+4
3	MULTI LEVEL CAR PARKING	12881.80	G+4
4	UGT -1	450	
	UGT -2	360	
5	STP	750	G
6	ELECTRICAL SUB STATION-1	300	G
7	ELECTRICAL SUB STATION-2	300	G
8	ELECTRICAL SUB STATION-3	300	G
	GRAND TOTAL	165476.93	

5. POPULATION DETAIL

Total population of the proposed project will be **8499** which include the population of dwelling units and visitors. Breakup of the population is given in **Table-5**.

Table-5: Calculation of Population

Sl. No.	Description	Total Capacity / Bed
1	Hospital Ward (Beds in Hospital Block)	630
2	Attendant (For Patient)	630
3	OPDs Visitors	3250
	Faculty & Staff	800
4	Medical College-Students	1000
5	Visitors @10% of Medical College Student population	100
6	Girls & Boys Hostel	908
6	Resident, Staff quarters for Hospital & College Staff, Workers & Guest Houst	1074
7	Visitors @10% of Staff quarter population	107
Total		8499

6. PARKING DETAIL

The details of parking required and provided is mentioned in following **Table 6**.

Table 6: Parking Details

MLCP (Cars)	12881.8 Sqm
Open Parking	2257.2 Sqm
Ground Floor (Resident Block)	4488.61 Sqm
Total Parking Area Provided	11234.42 Sqm
MLCP (Cars)	370 Nos.
Open Parking	28 Nos.
Ground Floor (Resident Block)	58 Nos.
Total no. of Parking Provided (ECS)	456 Nos.

7. LANDSCAPE DEVELOPMENT

Increasing vegetation in the form of greenbelt is one of the preferred methods to mitigate air pollution. Plants serve as a sink for pollutants, reduce the flow of dust and reduce noise pollution. The site for the proposed buildings is vacant so, no tree cutting is required. Calculation of green area for proposed project is given in **Table-7**.

Table-7: Calculation of Green Area

Total Plot Area	110883.87 Sqm.
Landscape area provided @ 27.89 %	30928.71 Sqm.
Total No. of Trees will be Planted @ 1 tree per 80 Sqm. of Plot Area	1386 Nos.

8.0 WATER REQUIREMENT, SUPPLY AND DISTRIBUTION

Water Requirement for the proposed project is discussed below.

8.1 Water requirement during Construction phase

Approx. 21 KLD water will be required for domestic as well as for construction purpose. Source of fresh water will be packaged drinking water. Source of construction water is treated water & tanker water supply.

No use of ground water or surface water will be used during the construction activity

- Cement mixing – 05 KLD
- Curing -02 KLD
- Sprinkling -05 KLD
- Domestic purposes – 9 KLD

7.2 Water requirement during operation phase

Water requirement during the operational phase will be met through ground water. The total water requirement for the proposed project has been estimated **~1061 KLD**. This includes domestic water requirement, flushing and landscaping. The total fresh water requirement is **~563 KLD** which includes domestic water requirement & Fresh Water for Lab & pathology. The water requirement for flushing and landscaping will be met through treated water from STP. Details of break-up of water requirement are given in **Table-8**.

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Table-8: Details of Water Requirement

S.N.	Description	Total Area in Sqm./Building	Population @1 Person / Sqm./Bed	Total Population/Bed	Water Requirement				Total Water Requirement	Total wastewater
					Flushing		Domestic			
					LPCD	in LPD	LPCD	in LPD		
1.0	Hospital Building Side									
1.1	Hospital Ward			630	150.00	94500.00	300.00	189000.00	283500.00	245700.00
	Hospital Attendant with patient (24 hours)			630	20.00	12600.00	25.00	15750.00	28350.00	25200.00
1.2	OPD Visitors			3250	10.00	32500.00	5.00	16250.00	48750.00	45500.00
1.3	Kitchen (1500 Meal Per Day)			1950	0.00	0.00	20.00	39000.00	39000.00	31200.00
1.4	Labs, Operation Theaters & Labour Rooms Etc.			-	0.00	0.00	0.00	15000.00	15000.00	12000.00
2.0	Karamchari Residence (G+3)	23	4	92	45.00	4140.00	90.00	8280.00	12420.00	10764.00
3.0	Non Medical Staff Housing (G+6)	72	5	360	45.00	16200.00	90.00	32400.00	48600.00	42120.00
4.0	Nursing Hostel (G+4)			150	45.00	6750.00	90.00	13500.00	20250.00	17550.00
4.1	Animal Shelter					1000.00		1000.00	2000.00	1800.00
4.2	ESS			20	20.00	400.00	25.00	500.00	900.00	800.00
5.0	MLCP			300	10.00	3000.00	5.00	1500.00	4500.00	4200.00
6.0	Organic/Biomedical Waste Plant			15	20.00	300.00	25.00	375.00	675.00	600.00
	Sub Total (I) KLD					171 KLD		333 KLD	504 KLD	437 KLD
7.0	Academic Building									
7.1	Medical College(G+3)			1000	20.00	20000.00	25.00	25000.00	45000.00	40000.00
7.2	Canteen / Kitchen			750	0.00	0.00	20.00	15000.00	15000.00	12000.00
7.3	Labs for Colleges			-	0.00	0.00	0.00	3000.00	3000.00	2400.00
7.4	Faculty & Staff for Academic			800	20.00	16000.00	25.00	2000.00	18000.00	17600.00
7.5	Visitor (10% of Total Population)	-	-	80	10.00	600.00	5.00	300.00	900.00	840.00
8.0	Engineering Service Block									
8.1	Medical Gas plant			10	20.00	200.00	25.00	250.00	450.00	400.00
8.2	Mortuary Block			50	20.00	1000.00	50.00	2500.00	3500.00	3000.00
8.3	Laundry @ 4 kg lenen per			2600	0.00	0.00	20.00	52000.00	52000.00	41600.00

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	day bed									
9.0	Residential Building Side									
9.1	Principal Residence	1	10	10	45.00	450.00	90.00	900.00	1350.00	1170.00
9.2	Medical Supritendent	1	10	10	45.00	450.00	90.00	900.00	1350.00	1170.00
9.3	Senior Residency (G+7) 1BHK	49	4	196	45.00	8820.00	90.00	17640.00	26460.00	22932.00
9.4	Professor Residency (G+6) 3BHK	24	6	144	45.00	6480.00	90.00	12960.00	19440.00	16848.00
9.5	Junior Residency (G+4)	64	1	64	45.00	2880.00	90.00	5760.00	8640.00	7488.00
10.0	Guest House and Complex	24	2	48	45.00	2160.00	90.00	4320.00	6480.00	5616.00
10.1	Staff	30		30	20.00	600.00	25.00	2000.00	2600.00	2200.00
10.2	Community			200	10.00	2000.00	5.00	1000.00	3000.00	2800.00
11.0	GYM & Sports Complex			100	20.00	2000.00	25.00	2500.00	4500.00	4000.00
12.0	Hostels									
12.1	Girls Hostel - (G+5)			155	45.0	6975.00	90.00	13950.00	20925.00	18135.00
12.2	Girls Hostel - (G+5)			155	45.0	6975.00	90.00	13950.00	20925.00	18135.00
12.3	Boys Hostel - (G+7)			215	45.0	9675.00	90.00	19350.00	29025.00	25155.00
12.4	Boys Hostel - (G+7)			215	45.0	9675.00	90.00	19350.00	29025.00	25155.00
12.5	Intern Girls Hostel-(G+4)			68	45.0	3060.00	90.00	6120.00	9180.00	7956.00
12.6	Intern Boys Hostel-(G+6)			100	45.0	4500.00	90.00	9000.00	13500.00	11700.00
12.7	Other Use									
12.9	DG Set Cooling	(625*1, KVA,750*2.& 1010 KVA*3) =5155 KVA ,1 lt./KVA/ 6 hr.							5155.00	-
12.9	Landscape area	Landscape area use 30928 Sqm. @ 3 Litres/Sqm							92780.00	-
12.1	HVAC Cooling Tower makeup								125000.00	-
	Sub Total (II) KLD					104 KLD		230 KLD	557 KLD	288 KLD
	Total (I+II) KLD					275 KLD		563 KLD	1061 KLD	725 KLD

8.3 Wastewater Generation

The total estimated quantity of wastewater to be generated from proposed project is ~725 KLD.

Calculation of wastewater generation is shown below in **Table-9**.

Table-9: Calculation of Wastewater Generation

Details	Water (KLD)
Water requirement for domestic purpose	545
Wastewater to be generated from domestic use (@ 80% of domestic water requirement)	436
Water requirement for Lab, Pathology, Laundry	18
Wastewater to be generated from Swimming pool use (@ 80 % of domestic water requirement)	14
Water requirement for Flushing Purpose	275
Wastewater to be generated from Flushing (@ 100% of flushing requirement)	275
Total Wastewater generated	725
STP capacity 20% higher than total waste water	~870

Water balance diagram for given in **Figure-5**.

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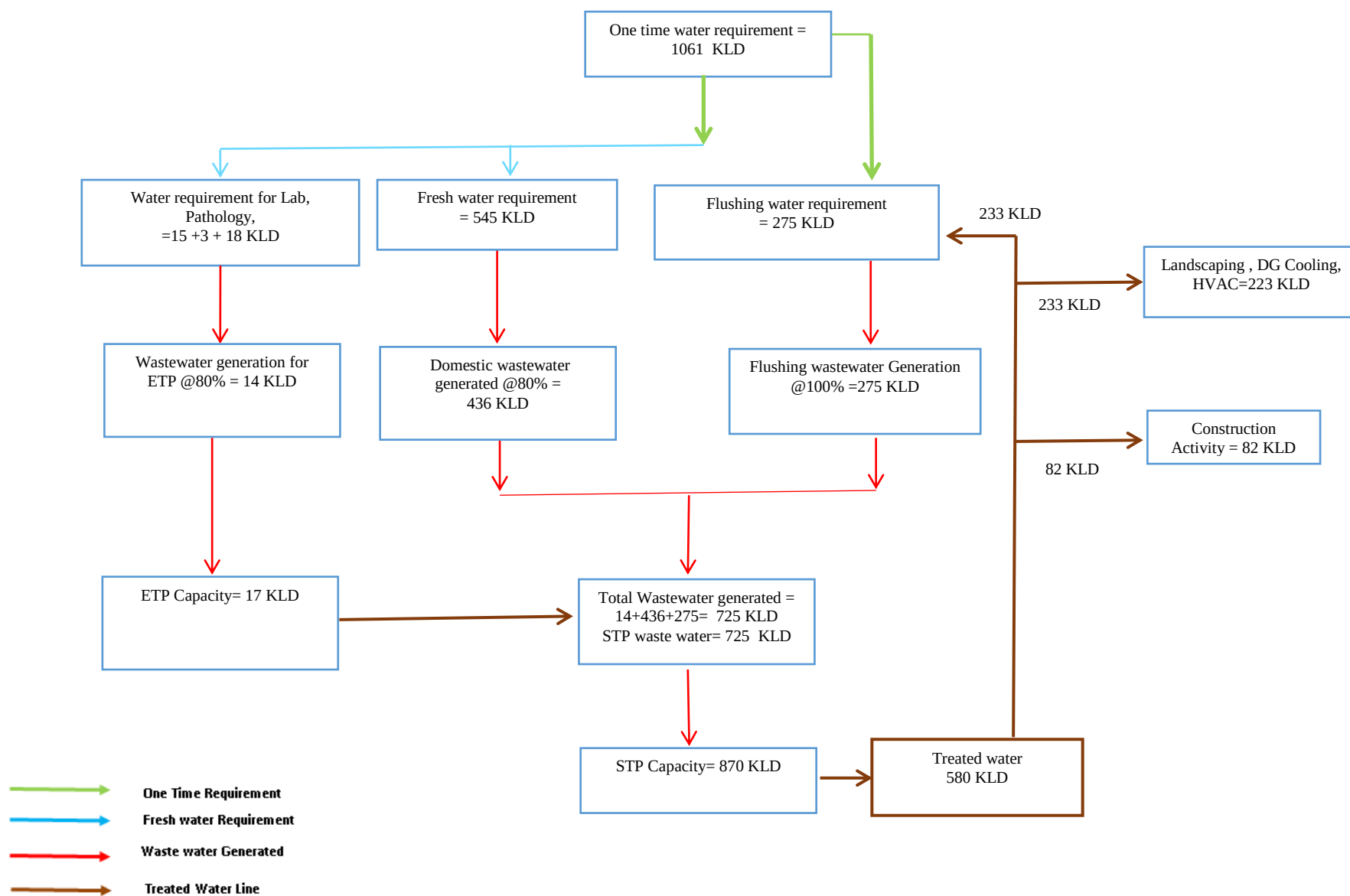


Figure-5: Water Balance Chart

Reuse of Treated Water:

Waste water generated is 725 KLD, which will be treated in the onsite STP of capacity 20% more than the waste water generated i.e., 870 KLD. The treated water available is 580 KLD (@ of 80%) and it will be recycled and re-used for flushing and landscaping purpose.

During the non-monsoon season, treated water will be used in Flushing & landscaping management and during the monsoon season, as there will be no requirement of water for landscaping, and the excess treated water depending upon requirement either will be used in nearby construction site or discharged into the sewer line.

Pre-treatment:

To reduce the chances of membrane damage, wastewater should undergo a high level of debris removal using screens prior to the MBR. Primary treatment is often provided in larger installations. In addition, all MBR systems require 1- to 3-mm-cutoff fine screens immediately before the membranes, depending on the MBR manufacturer. These screens require frequent cleaning.

Membrane Configuration:

MBR manufacturers employ membranes in two basic configurations: hollow fiber bundles and plate membranes. A number of **bundles** are connected by manifolds into units that can be readily changed for maintenance or replacement.

The other configuration, employ **membranes** in a flatplate configuration, again with manifolds to allow a number of membranes to be connected in readily changed units.

System Operation:

All MBR systems require some degree of pumping to force the water flowing through the membrane. While other membrane systems use a pressurized system to push the water through the membranes, the major systems used in MBRs draw a vacuum through the membranes so that the water outside is at ambient pressure. The advantage of the vacuum is that it is gentler to the membranes; the advantage of the pressure is that throughput can be controlled. All systems also include techniques for continually cleaning the system to maintain membrane life and keep the

system operational for as long as possible. All the principal membrane systems used in MBRs use an air scour technique to reduce buildup of material on the membranes. This is done by blowing air around the membranes out of the manifolds.

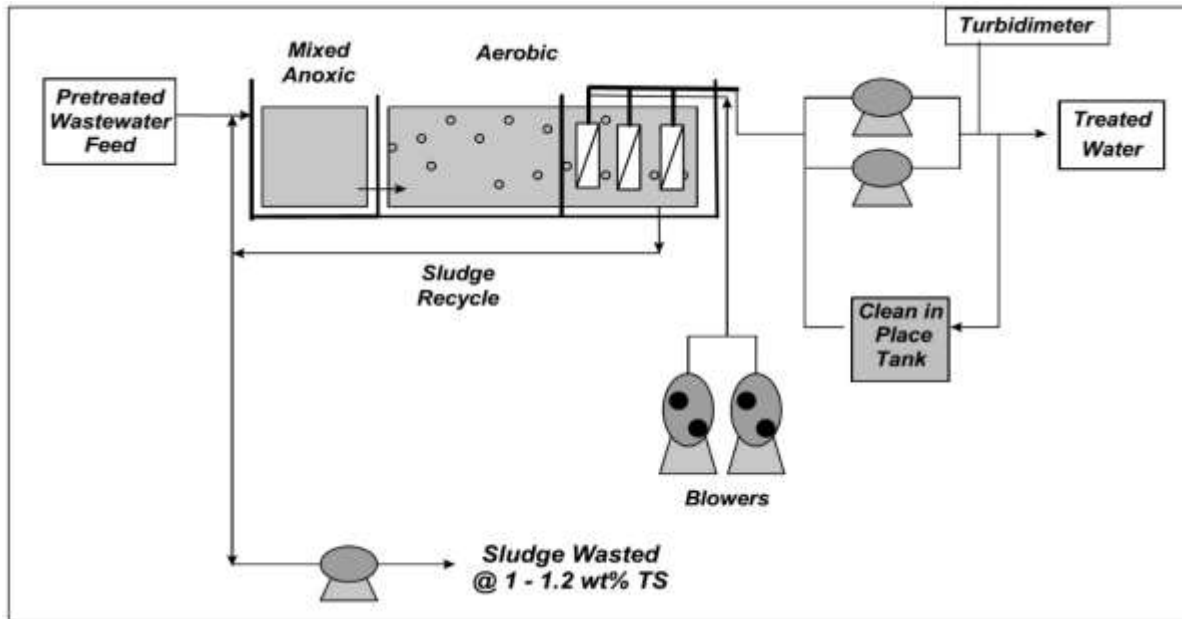
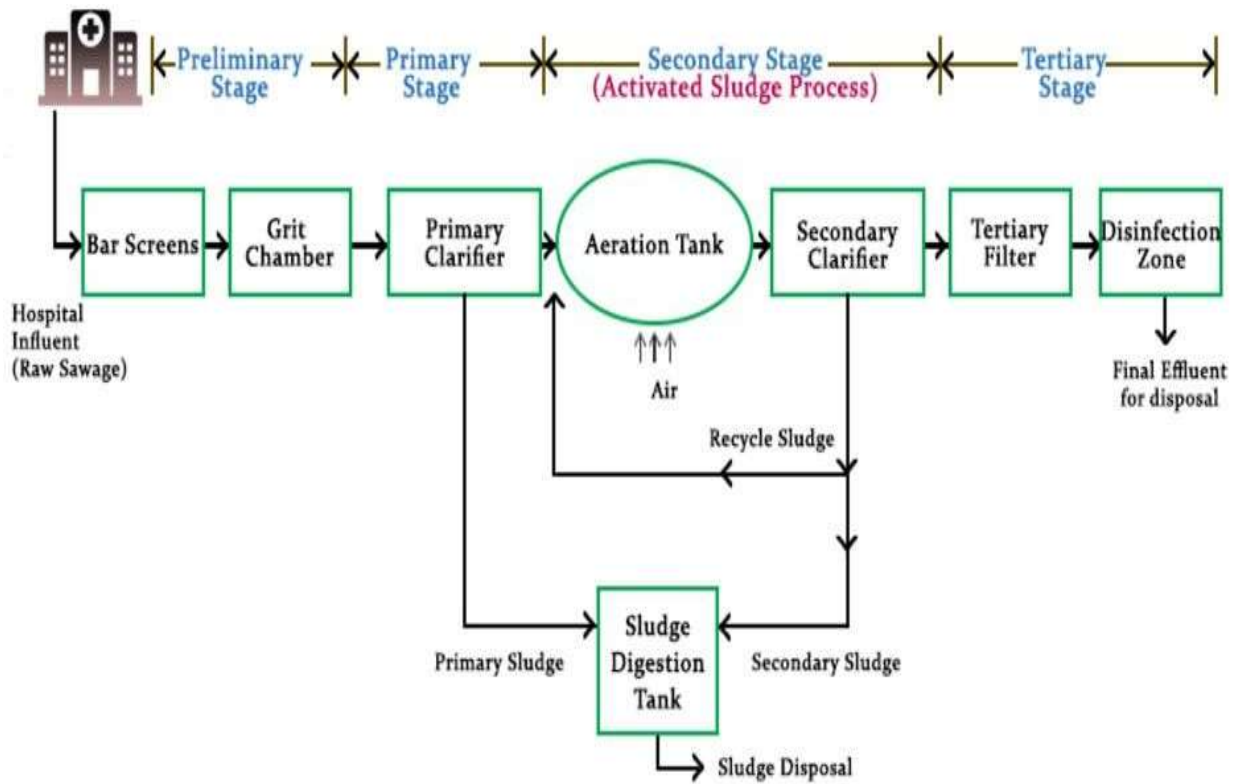


Figure 6: Schematic Diagram of MBR STP



ETP Diagram

8. STORM WATER MANAGEMENT

The storm water disposal system for the premises shall be self-sufficient to avoid any collection/ stagnation and flooding of water. Maximum harvesting will be done within the site. Therefore, it has been decided to provide sufficient rain water harvesting at selected locations, which are liable to catch the maximum run-off from the area. Following are some measures for Storm water disposal:

- 1) Since the existing topography is congenial to surface disposal, a network of storm water pipe drains is planned adjacent to roads. All building roof water will be brought down through rain water pipes.
- 2) Proposed storm water system consists of pipe drain, catch basins and seepage pits at regular intervals for rain water harvesting and ground water recharging.
- 3) The annual rainfall intensity of 40 mm/hr shall be considered for designing the storm water drainage system.

The entire site is provided with extensive planned drainage system to low lying areas. The arrangement provides appropriate protection to the site against flooding.

10. RAIN WATER HARVESTING

Rainwater harvesting is the activity of direct collection of rainwater. Collected Rainwater will be stored for direct use or for recharging the groundwater. Rain Water Harvesting is the technique through which rain water is captured from the roof and paved surfaces and stored in sub-surface ground water reservoir by adopting artificial recharge techniques.

Advantages:

- ✓ To meet the ever increasing demand for water.
- ✓ To avoid flooding of roads.
- ✓ To augment the ground water storage and control the decline of water table levels.
- ✓ To reduce ground water pollution.
- ✓ To improve the quality of ground water.
- ✓ To reduce the soil erosion.
- ✓ To supplement domestic water requirement during summer, drought etc.
- ✓ Improves the quality of ground water through dilution when recharged to ground water.

As stated above, due to high ground water table, it is not feasible to provide the rain

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water recharge pits for aquifer recharging but there will be provision of the water sump for the collection of roof top rain water and it will be further used for miscellaneous purposes. The rainwater runoff from the roofs shall be transported through underground pipes to water sumps structures & surface rainwater shall naturally percolate in the underground aquifer through natural filtration.

Table-10: Rainwater Harvesting Calculation

Input Data			Unit	Reference
Catchment Area		Value		
1	Rooftop Area of Building/shed	30937.03	sq-mtr	
2	Green Belt Area	30928.71	sq-mtr	
3	Open & Paved Area	49018.13	sq-mtr	
	Total	110883.87		
Run off Coefficient, c				
	Rooftop Area of Building/shed	0.85		RWH in India, MoEF&CC, e-book 2016
	Green Belt Area	0.15		
	Paved Area	0.75		
	Open Area	0.15		
				CGWB
Rainfall				
	Average Annual Rainfall	1570	mm/year	
	Hourly Peak Rainfall Intensity, I	45	mm/hour	
	Peak Time taken	15	minutes	$Q = A * c * I$
Total Volume of Water to be Captured on Annual Basis				
	Rooftop Area of Building/shed	41285.47	cu-m/year	
	Green Belt Area	7283.71	cu-m/year	
	Paved Area	57718.85	cu-m/year	
Runoff Calculation for the Peak Rainfall, Q				
	Rooftop Area of Building/shed	295.84	cu-mtr/hour	RWH in India, MoEF&CC, e-book 2016
	Green Belt Area	52.19	cu-mtr/hour	
	Paved Area	413.59	cu-mtr/hour	
	Total	761.62	cu-mtr/hour	
Annual Recharge Potential				IMD
	Recharge Potential	106288.03	cu-m/year	
	Rainy Season	June-Sep		
Design of Recharge Structure for Peak Flow				
Calculation for One Pit				

	Diameter of Pit	4.5	mtr	
	Depth of the Pit	4.5	mtr	
	Volume of the Pit	71.57	cu-mtr	
Number of Pits Required to store the peak discharge		10.6		
Rain water harvesting Pits provided		10		

Number of RWH Pits Proposed = ~10

11. POWER REQUIREMENT

The total electrical load demand has been estimated to be ~3972.86 KW. The source of power will be supplied by State Electricity Board.

In case of power failure, 4 DG sets of each of capacity of 3 x 1010 KVA , 2 x 750 KVA & 1 x 625 KVA will be provided as power back-up. The DG sets are located in the basement and will be air cooled.

The DG sets will be provided with acoustic enclosure. Adequate stack heights of D.G. Sets will be provided as per the stipulated guidelines of Central Pollution Control Board (CPCB) to facilitate natural dispersion of exhaust gases as the calculation for the stack height is given below considering height of the building

Calculation of DG Stack Height:

$$H = h + 0.2 \sqrt{(\text{capacity of DG in KVA.})}$$

Where:

H = Total height of stack in meter.

h = Height of the building in meters where the generator set is installed.

KVA = Total generator capacity in the set of KVA.

For DG set of 1010 KVA

$$H = h + 0.2 \sqrt{1010}$$

$$H = h + 0.2 \times 31.7$$

$$H = h + 6$$

For DG set of 750 KVA

$$H = h + 0.2 \sqrt{750}$$

$$H = h + 0.2 \times 27$$

$$H = h + 5$$

We suggest 5 meter above the max. Height of the building

For DG set of 500 KVA

$$H = h + 0.2 \sqrt{625}$$

$$H = h + 0.2 \times 22$$

$$H = h + 5$$

We suggest 5 meter above the max. Height of the building

12. SOLID WASTE GENERATION AND MANAGEMENT

The project will adopt a systematic approach for solid waste collection and disposal. Solid waste generated from the project will be collected properly and will be managed as per Solid Waste Management Rules, 2016. Following solid waste generation rate has been considered as given in **Table-11**.

Table 11: Solid waste Generation details

Sl. No	Description	Total Population	Unit rate Waste Generation	Solid Waste (Kg/day)	Bio-degradable	Non-biodegradable
1	Hospital Bed	630	1	630		
2	Attendant with patient (24 hours)	630	0.45	283.5	170.1	113.4
3	OPD	3250	0.1	325	195	130
4	Hospital & Medical College Staff	1195	0.1	119.5	71.7	47.8
5	Medical college Student	1000	0.1	100	60	40
	Girls & Boys Hostel	908	0.45	408.6	245.16	163.44
6	Boys Hostels, Girls Hostel, Nursing Hostel & Residential unit	1075	0.45	483.75	290.25	193.5
7	Visitors @10% of Resident & Medical College Student	207	0.15	31.05	18.63	12.42
8	Canteen / Kitchen	2700	0.25	675	405	270
	Total solid Waste			2427	1456	971
	Biomedical Waste Generation (Hospital Bed)	1.0 kg/bed		630 kg/day		
	OPD Medical Waste	10% of total BMW		63 Kg/day		

Reference: NBC 2016

Source: Manual on Municipal Solid Waste Management, published by Central Public Health and Environmental Engineering Organization (CPHEEO), Ministry of Urban Development, Government of India.

Separate color-coded bins will be provided in the hospital campus for collection of different types of Bio-Medical Waste for the proper treatment.

Bio-Medical Waste: Biomedical waste is waste that is either putrescible or potentially infectious. Biomedical waste is generated from biological and medical sources and activities, such as the diagnosis, prevention, or treatment of diseases. Biomedical waste may be solid or liquid. Examples of infectious waste include discarded blood, sharps, unwanted microbiological cultures and stocks, identifiable body parts, other human or animal tissue, used bandages and dressings, discarded gloves, other medical supplies that may have been in contact with blood and body fluids, and laboratory waste. Biomedical waste is properly collected in the separate container and will be disposed by authorized processor for Biomedical Waste. Bio-medical Waste Treatment Facility (CBMWTF) for disposal of Bio-Medical Waste As per rule.

Cat.	Type of Bag/ Container used	TYPE OF WASTE	Treatment /Disposal options
Yellow 	non-chlorinated plastic bags Separate collection system leading to effluent treatment system →	a) Human Anatomical Waste b) Animal Anatomical Waste c) Soiled Waste d) Expired or Discarded Medicines e) Chemical Waste f) Micro, Bio-t and other clinical lab waste g) Chemical Liquid Waste	Incineration or Plasma Pyrolysis or deep burial*
Red 	non-chlorinated plastic bags or containers	Contaminated Waste (Recyclable) tubing, bottles, intravenous tubes and sets, catheters, urine bags, syringes (without needles) and gloves.	Auto/ Micro/Hydro and then sent for recycling. not be sent to landfill
White 	(Translucent) Puncture, Leak, tamper proof containers	Waste sharps including Metals	Auto or Dry Heat Sterilization followed by shredding or mutilation or encapsulation
Blue 	Cardboard boxes with blue colored marking	Glassware	Disinfection or auto/ Micro/hydro and then sent for recycling.

The E-waste generated is managed as per the E-waste management and handling rules 2016.

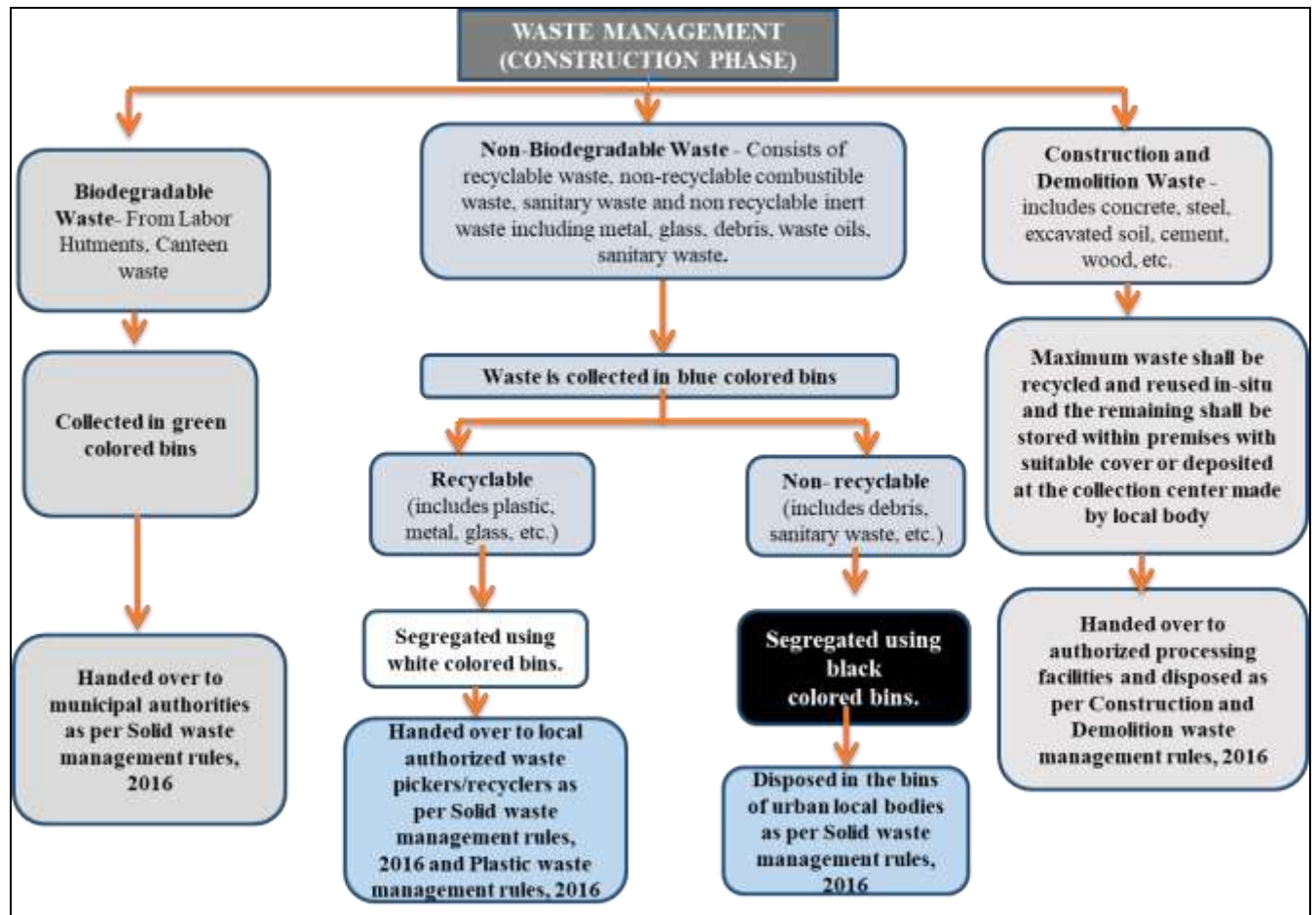


Figure-7: Solid Waste Management during Construction Phase

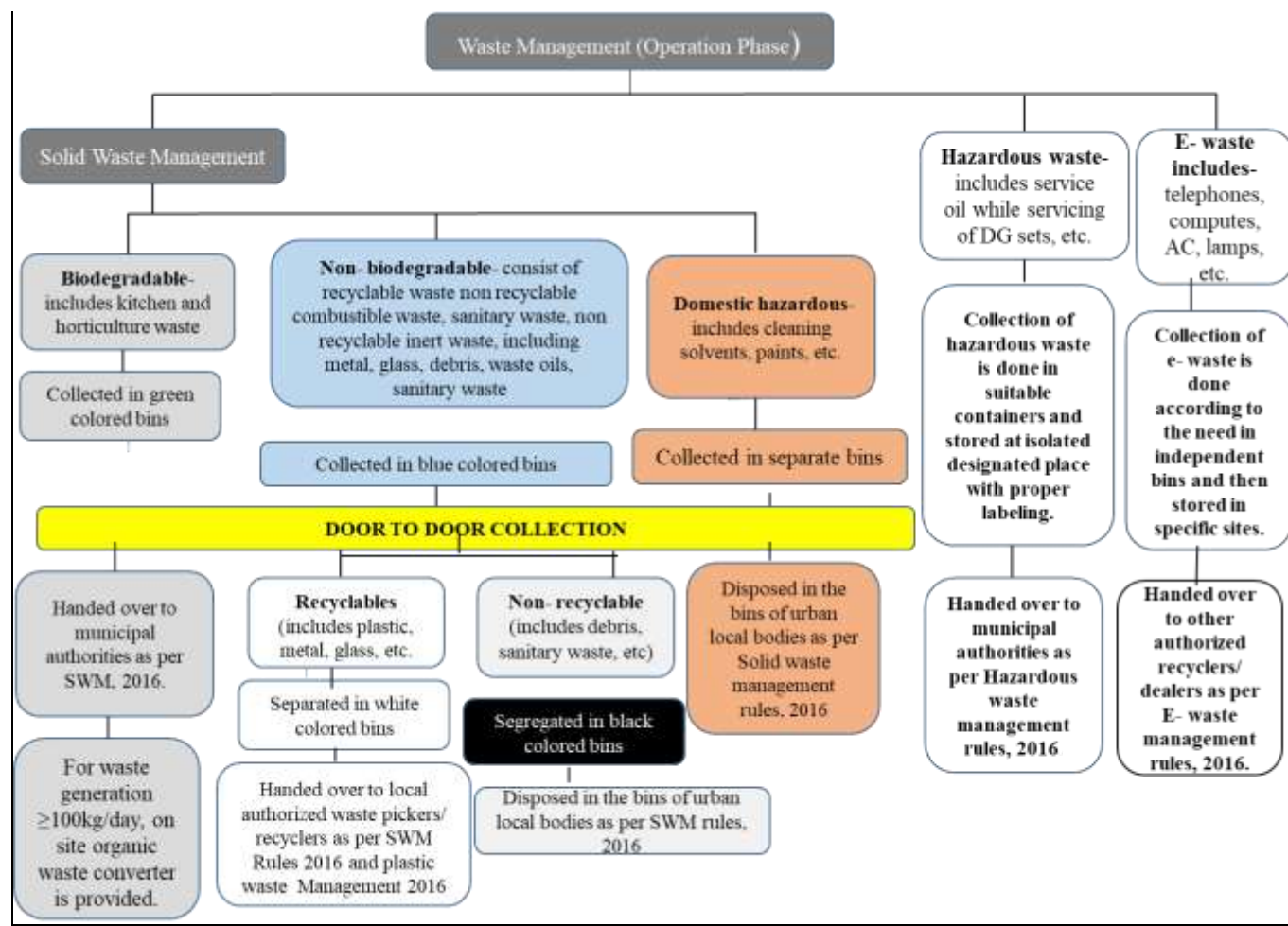


Figure 8: Solid Waste Management during Operation Phase

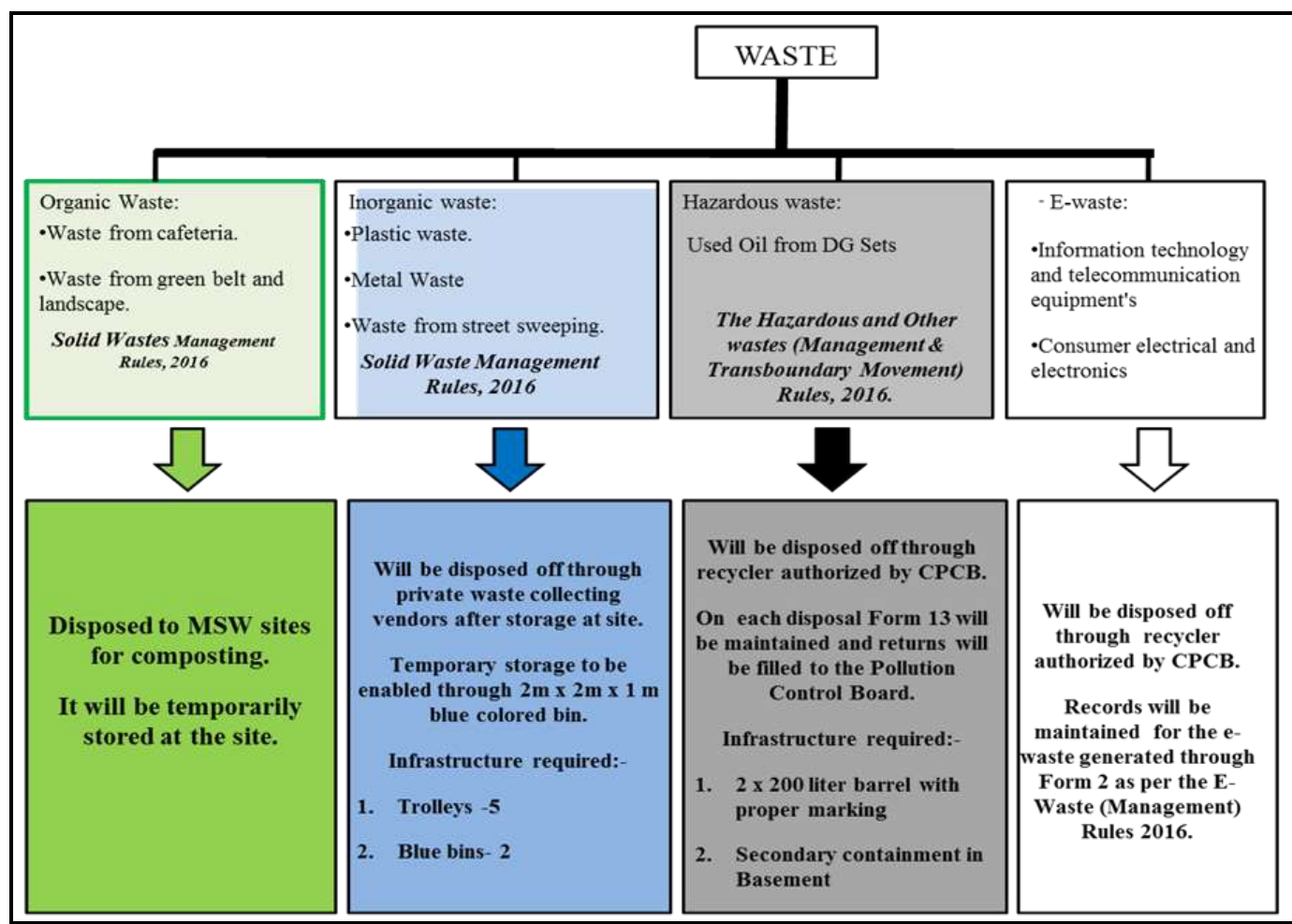


Figure-9: Hazardous Waste Management Plan

13. FIRE FIGHTING SYSTEM

The Fire Fighting will be designed as per the recommendations of the National Building Code of India: Part 4 Fire and Life safety: 1997. The building has been classified under Group-C: Institutional Building, Sub Division (C-1) in the National Building Code 2016.

The fire-fighting system has been designed considering the following codes, manual and guidelines;

- National Building Code of India (NBC)
- As per requirement of fire officer/local fire approving authorities; and
- As per Indian Standard Code for Fire Protection (IS Codes)

14. DETAIL OF CONSTRUCTION MATERIAL

List of building materials will be used at site:

- Sand 3384217.52 Cu.Ft
- Aggregate-2582692.318 cu.ft
- Cement(50 Kg/BAG)-712466 BAG
- Bricks-15139920.486 Nos
- Steel- 6679 Ton

PLY- 507585 SFT Finishing materials like tiles, sanitary fixtures, etc. shall be stored in closed rooms..

16. Occupational Health and Safety (during construction)

The Management of the project has committed for the health and safety of workers as under;

- The management declares its intention and commitment with all relevant statutory requirements in regard to environment, health and safety of workers.
- The management has assigned the responsibility at different levels as:

Project Manager : For all the workers/employees.

Supervisor : For casual and daily/unskilled workers.

The management will ensure the occupational health and safety, at the site during construction, by adopting following practices;

- a) Every responsible effort will be made to provide and maintain safe and healthy working conditions, environment, and system of work for all employees.
- b) It will also endeavor of the project proponent to ensure that surrounding environment is not adversely affected by the work activity.
- c) The working environment would be healthy and co-operative.
- d) The prevention of accidents or accident hazards leading to personal injury or damage of equipment/property is recognized as essential as an integral part of efficient operations.
- e) Every employee will follow safety rules/regulations, operating procedures/safe work method design to protect people and equipment from risk of injury of damage to property.
- f) The project will endeavor to adequately train all employees suitably equip them to perform

their duties in a safe and effective way.

- g) Every employee will discharge his personal responsibility, and shall co-operate and actively participate in maintaining and improving safety standards.
- h) A primary health care centre will be provided within the campus. Besides, there is a multi-specialty private hospital (on panel of the institute) just opposite to the institute entrance.
- i) A doctor will be appointed for health checkup of workers at regular intervals and related records shall be maintained. A doctor and a hospital will be empanelled for attending off site health problems of the workers.
- j) First Aid kits will be kept ready and available to the workers, in case of emergencies, company will provide fastest possible medical aid. Staff will be adequately trained for this.
- k) Adequate supply of clean drinking water, neat and clean toilets and washing facilities will be provided at the site.
- l) Proper ventilation, wherever required, shall be provided in the work areas.
- m) Proper safety and protections, steps and guards shall be provided at all required places.
- n) Suitable safety instructions will be displayed in writing (including that in vernacular language) for all critical areas and working conditions.
- o) A vehicle/ambulance will be specifically positioned at the site for emergency evacuation of workers in case of any health problem/accident.
- p) ***Budget of Rs. 3,00, 000/- will be allocated under Occupational health & safety programme during construction phase.***
- q) ***Budget of Rs. 4,00, 000/- will be allocated under Occupational health & safety programme during operational phase.***