

CONCEPTUAL PLAN

1. INTRODUCTION

M/s Trilokeshwar Estates Private Limited has developed warehouse at Mauza-Simlimurarpur (NH-30), Maalsalami, Patna, Bihar. The land use of the proposed project site is marked under industrial as per approved master plan of Patna 2031. The total built up area is **36,335.45 Sqm.**

It is required to obtain “Environment Clearance (EC)” for regularization of “Warehouse” at Mauza-Simlimurarpur (NH-30), Maalsalami, Patna, Bihar under EIA notification, 2006 & Office Memorandum vide F. No. 3-85-2016-IA-III (E 8125) dated 30th April, 2024 for total plot area 54332.95 Sqm. and total built-up area 36335.45 Sqm.

We have already obtained the Consent to Establish (CTE) from Bihar State Pollution control board (BSPCB) vide memo no. 499 dated 21/02/2024, enclosed as **Annexure-I**, but at the time CTO application BSPCB has raised the query to obtain Environment clearance as per the provision of Office Memorandum vide F. No. 3-85-2016-IA-III (E 8125) dated 30th April, 2024 (**Annexure-VII**). Our building plan is also approved by Patna Metropolitan area authority vide case no. PMAA/PCN/Simlimurarpur/Maalsalami/G+01/48/2022-612 dated 19/06/2022, enclosed as **Annexure-II**.

The Project built up area is greater than 20,000 sqm and less than 1,50,000 sqm. therefore, designated under Category “B” and falls under Item 8 (a) (Building & Construction Project) of the Environmental Impact Assessment (EIA) Notification of September 14, 2006 and its subsequent amendments. The Summary of Land along with land documents is attached as **Annexure-III**.

2. SITE SURROUNDING & CONNECTIVITY

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

Table-1: Site Surroundings and Connectivity Details

S. No.	Description		Distance and Direction
1.	Nearest Railway Station	Deedarganj Railway Station Patna Shaheb Railway Station Banka Ghat Gulzarbagh Railway Station	Approx. 0.98 Km towards East Approx. 1.95 Km towards NW Approx. 3.91 Km towards SE Approx. 4.83 Km towards NW
2.	Nearest Airport	Jayprakash Narayan International Airport, Patna	Approx. 15.31 km towards West
3.	Nearest Village	Paijawa Deedarganj Begumpur	Approx. 2.52 Km towards WSW Approx. 1.45 Km towards ENE Approx. 1.50 Km towards NNW
4.	Nearest Highway/Roads	NH31 NH431	Adjacent to the site Approx. 0.58 Km towards East
5.	Nearest School & College	Rajkiya Ramnarayan Madhaya Vidyalaya Govt. +2 Boys High School, Patna City Govt.H.S.Gulzarbagh	Approx. 1.25 Km towards ENE Approx. 2.81 Km towards NNW Approx. 5.42 Km towards NW
6.	Nearest Hospital	Guru Govind Singh Sadar Hospital Patna City Hospital Patna Sadar PHC Hospital	Approx 4.21 Km towards NW Approx 4.35 Km towards NW Approx 3.19 Km towards ESE
7.	Places of worship	Takhat Shri Harimandir Ji Patna Sahib Surya Temple, Bairiya Karanpur Gurdwara Bal Leela Maini Sangat Chhoti Patan Devi Temple	Approx. 2.98 Km towards NNW Approx. 2.92 Km towards WSW Approx. 2.70 Km towards NW Approx. 2.70 Km towards NW
8.	Water Bodies	Ganga River Punpun River Mangal Talab	Approx. 2.48 Km towards ENE Approx. 4.18 Km towards SSE Approx. 2.93 Km towards NW
9.	Town	Patna City	Approx. 10.70 Km towards WNW
10.	Reserve Forest/ Zoo	Sanjay Gandhi Biological Park, Patna	Approx. 14.64 Km towards WNW

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 Top sheet no G45N2, G45N3, G45N6*) of 10 km radius is shown in **Figure 3**.

Warehouse at Mauza-Simlimurarpur (NH-30), Maalsalami, Patna, Bihar

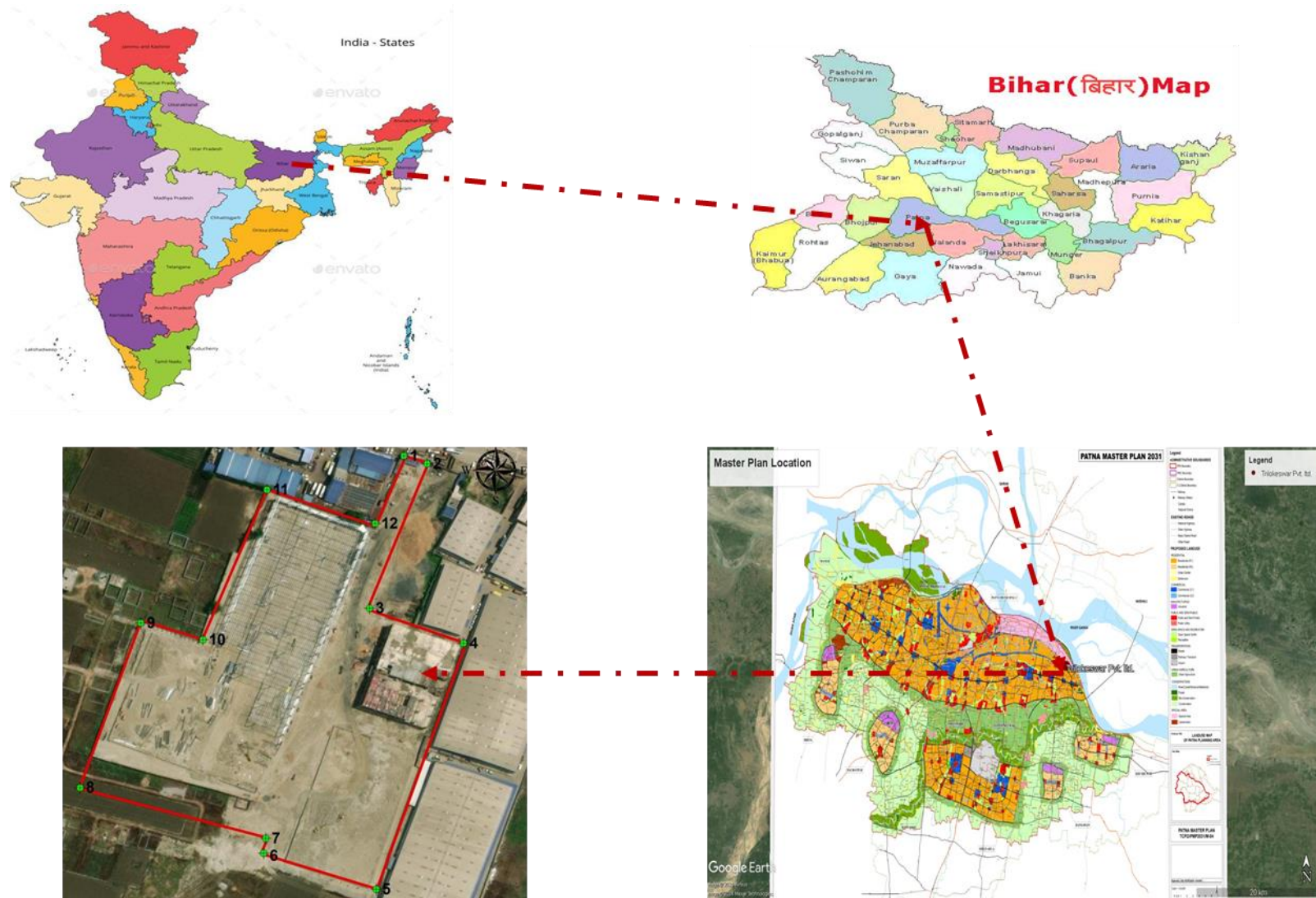
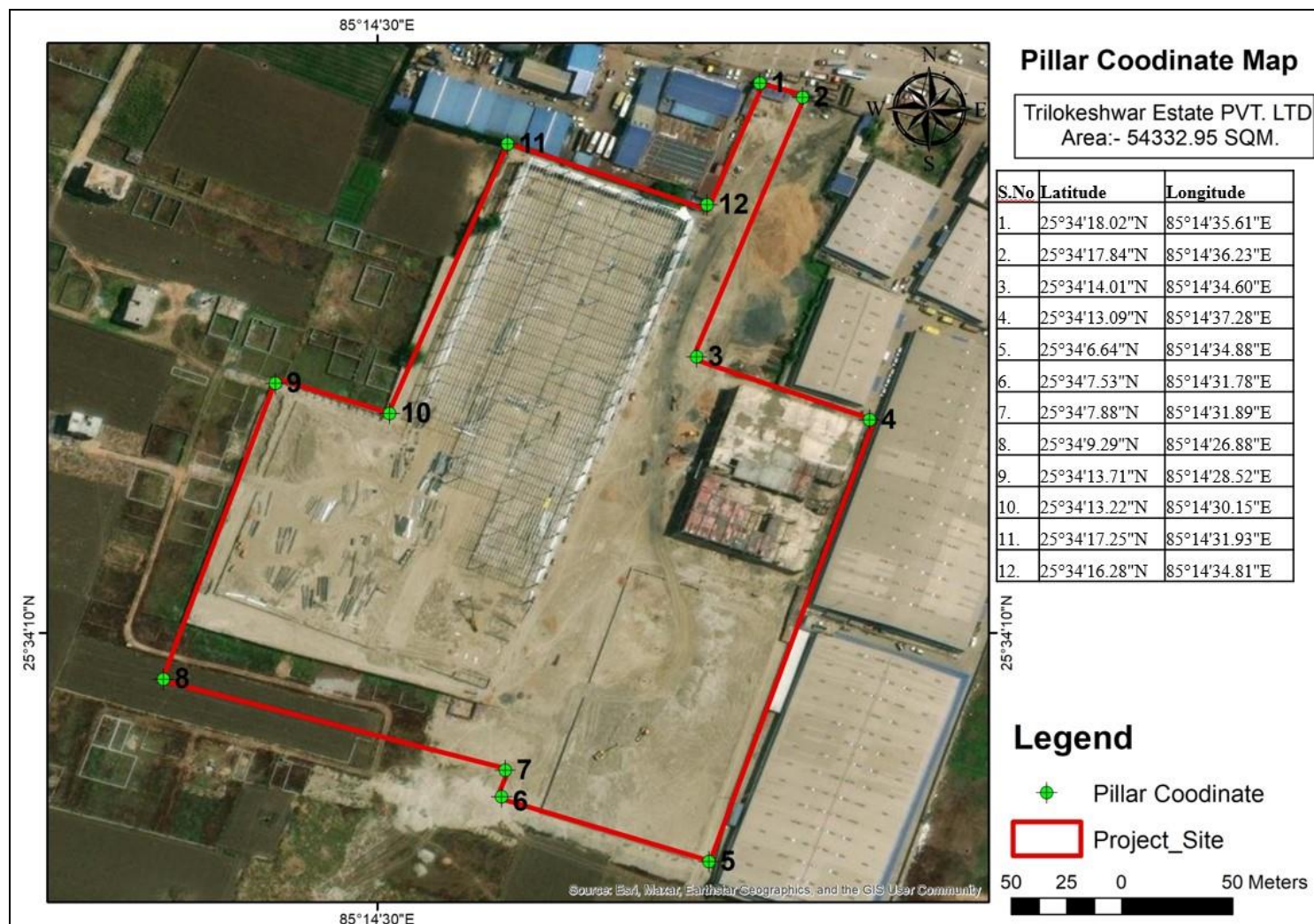
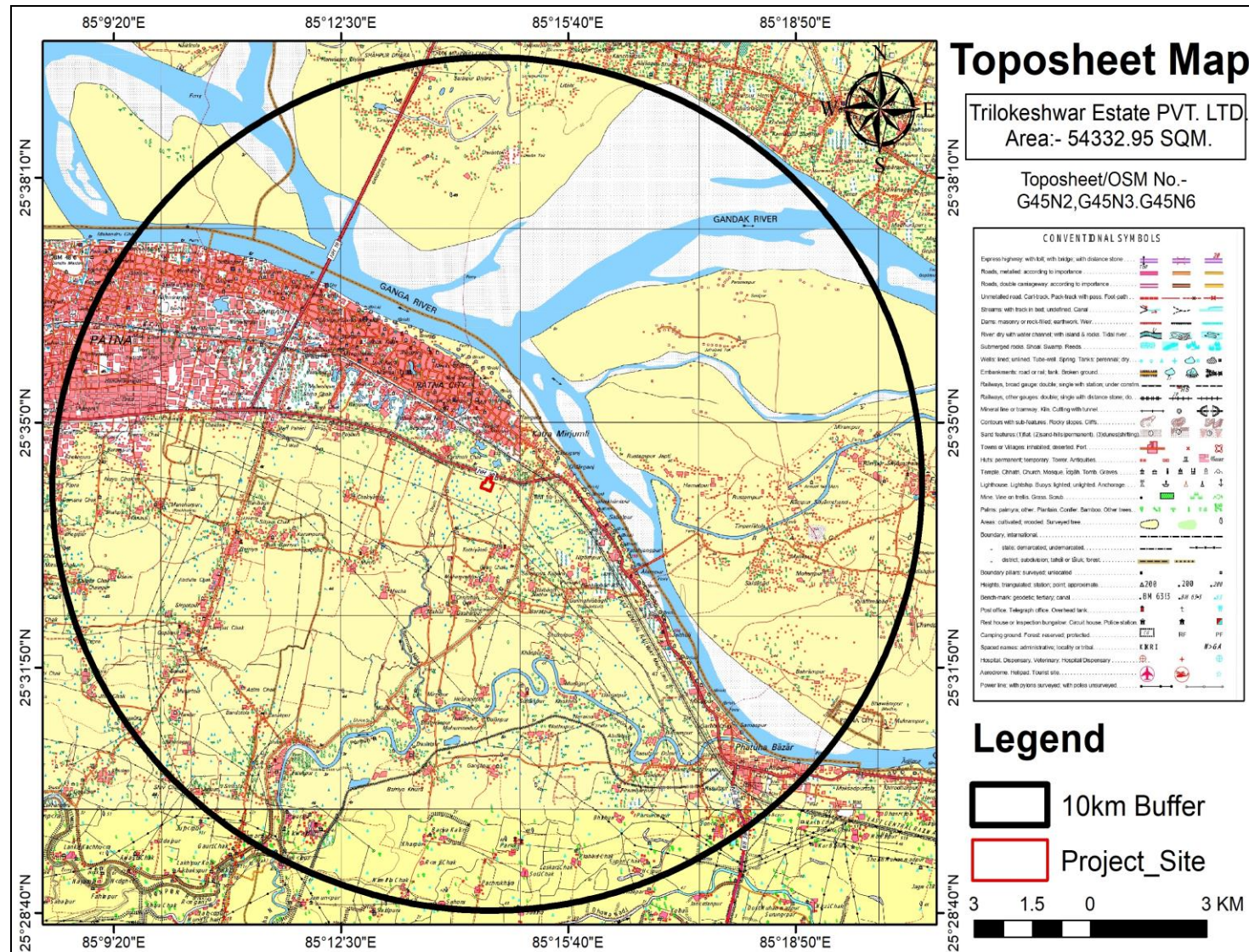


Figure-1: Site Location Map



Source: Google Map

Figure-2: Pillar Coordinate Map



Source: Survey of India

Figure 3: Topographical Map of 10 km radius

3. PROJECT LOCATION AND DESCRIPTION

The Proposed project “Warehouse” at Mauza- Simlimurarpur (NH-30), Maalsalami, Patna, Bihar. The coordinates of the project boundary are mentioned below in the **Table-2**.

Table-2: Coordinates of the Project Boundary

S. No.	Latitude	Longitude
1	25°34'18.02"N	85° 14'35.61"E
2	25°34'17.84"N	85° 14'36.23"E
3	25°34'14.01"N	85° 14'34.60"E
4	25°34'13.09"N	85° 14'37.28"E
5	25°34'6.64"N	85° 14'34.88"E
6	25°34'7.53"N	85° 14'31.78"E
7	25°34'7.88"N	85° 14'31.89"E
8	25°34'9.29"N	85° 14'26.88"E
9	25°34'13.71"N	85° 14'28.52"E
10	25°34'13.22"N	85° 14'30.15"E
11	25°34'17.25"N	85° 14'31.93"E
12	25°34'16.28"N	85° 14'34.81"E

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

Table-3: Brief description of the Project

Sr. No.	Particulars	
1.	Total Plot area	54,332.950 Sqm.
2.	Permissible FAR @1.50	81,499 Sqm.
3.	Total FAR Achieved 0.644	35006.45 Sqm.
4.	Parking provided at Ground floor	1329 Sqm.
5.	Total Built-up Area	36335.45 Sqm
6.	Area for Transformer, Gen set, car parking, 2 wheeler parking, Guard room, Toilet	219.3 Sqm
7.	Green Belt area required @ 10%	5433.29 Sqm
8.	Green Belt area provided @ 10.16%	5525 Sqm
9.	Covered area / Terrace area	31457.31 Sqm
10.	Road Area, Open area and other Miscellaneous area	17350.64 Sqm
11.	Rain Water Harvesting Pits (with size)	10 (RWH Pit size= 43.98 m ³)
12.	STP Capacity	8 KLD

Sr. No.	Particulars		
13.	Maximum Height of the Building (m)		Approx. 8 m.
14.	Power Requirement		~750 KW
15.	Power Backup		4 DGs of (1 x 30 KVA, 1 x 400 KVA, 1 x 200 KVA, 1 x 85 KVA)
16.	Total Water Requirement		~9 KLD Fresh water –4 KLD Treated water-5 KLD Source: Ground water
17.	Waste water Generated		~6.5 KLD
18.	Solid Waste Generated		~73 Kg/day
19.	Biodegradable Waste		~29 Kg/day
20.	Non-Biodegradable Waste		~44 Kg/day
27.	Number of Ware Houses		03
29.	Max. Stories		G+1
30.	Project Cost		56 Crores
			During Operation Capital Cost: 68 Lakhs Recurring Cost: 17 Lakhs
32.	Connectivity	Deedarganj Railway Station Patna Shaheb Railway Station Banka Ghat Gulzarbagh Railway Station	Approx. 0.98 Km towards East Approx. 1.95 Km towards NW Approx. 3.91 Km towards SE Approx. 4.83 Km towards NW
		NH 30	Adjacent to the site
		Jayprakash Narayan International Airport, Patna	Approx. 15.31 km towards West

Table-4: Detailed Area Statement

S. No.	Details	Area (Sqm.)
1	Total Plot area	54,332.950
2	Permissible FAR @1.50	81,499
3	Total FAR Achieved 0.644	35006.45
4	Parking provided at Ground floor	1329
5	Total Built-up Area	36335.45
6	Area for Transformer, Gen set, car parking, 2 wheeler parking, Guard room, Toilet	219.3
7	Green Belt area required @ 10%	5433.29
8	Green Belt area provided @ 10.16%	5525
9	Covered area / Terrace area	31457.31
10	Road Area, Open area and other miscellaneous area	17350.64

4. DETAIL OF BUILDING BLOCK

Details of Building Blocks are mentioned in **Table 5**.

Table 5: Details of Building Blocks

Type of building	No. of Floors
Warehouse-1	G
Warehouse-2	G+1
Attached Building of WH-2 (Canteen, Elect. Room, guard room , Toilet)	G
Warehouse-3	G

5. POPULATION DETAIL

Total population of this project is **180** which include the population of visitors. Breakup of the population is given in **Table-6**.

Table-6: Calculation of Population

Total Built-up area for Persons other than storage building	1865.69 Sqm.
Total Carpet area @ 1865.69/2	932.84 Sqm.
Population @ 6 Sqm. per person	156
Visitors @ 15% of total population	24

6. PARKING DETAIL

The total parking area provided is 1329 sqm.

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	54332.95 Sqm.
Landscape area provided @ 15.21 %	5525Sqm.
Total No. of Trees will be Planted @ 1 tree per 80 Sqm. of Plot Area	679 Nos.

8.0 WATER REQUIREMENT, SUPPLY AND DISTRIBUTION

Water Requirement for the proposed project is discussed below.

8.1 Water requirement during Construction phase

During Construction Phase: Construction of ware house already been completed.

8.2 Water requirement during operation phase

Water requirement during the operational phase of the project is fresh water 4 KLD will be met through Ground water. The total water requirement has been estimated 9 KLD. This includes domestic water requirement, flushing and landscaping. 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**.

Table-8: Details of Water Requirement

S. No.	Description	Area in Sqm	Unit Population	Population	Unit water consumption (lpcd)	Total water required (kld)	Fresh water required (kld)	Flushing (kld)	Total Wastewater (kld) (80% of domestic +100% Total flushing)
1	Staff in Ware house	932.84 Sqm. (Total Carpet area @ 1865.69/2-for Person other than storage building)		156	45 (25+20)	7.02	3.9	3.12	6.24
2	Visitors in ware house	...	Population @ 6 Sqm. per person	24	15 (5+10)	0.36	0.12	0.24	0.336
	Subtotal I					7.38	4.02	3.36	6.576
	Reuse of treated water								
1	Horticulture	5525 Landscape area		...		1.64			
		Subtotal II				1.64			
		Grand Total I+II				9			

8.3 Wastewater Generation

The total estimated quantity of wastewater to be generated is **~6.5 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	4
Wastewater to be generated from domestic use (@ 80% of domestic water requirement)	3.2
Water requirement for Flushing Purpose	3.36
Wastewater to be generated from Flushing (@ 100% of flushing requirement)	3.36
Total Wastewater generated	6.5
STP capacity 20% higher than total waste water	~8

Water balance diagram for given in **Figure-4**.

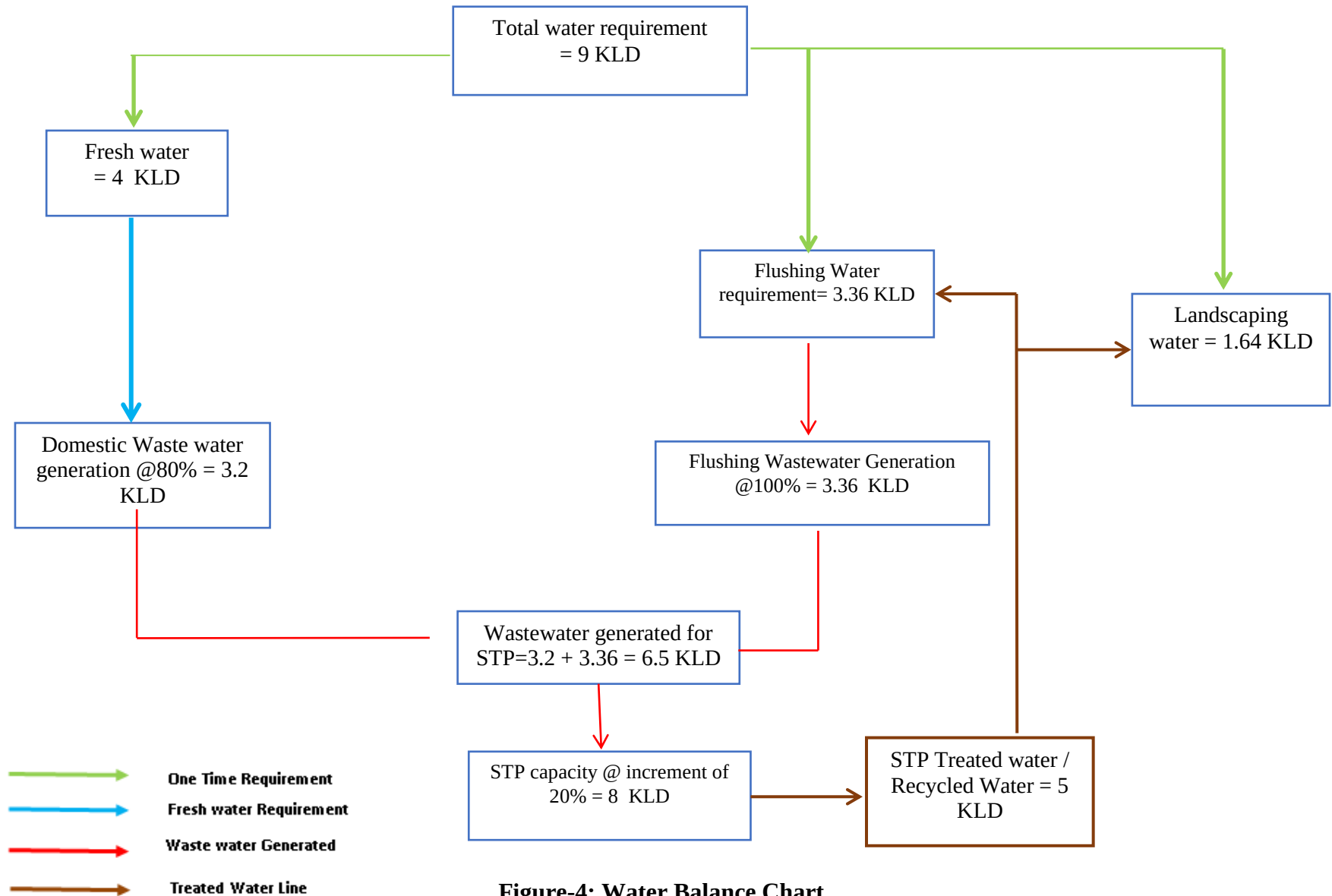


Figure-4: Water Balance Chart

Reuse of Treated Water:

Waste water generated is 6.5 KLD, which will be treated in the onsite STP of capacity 20% more than the waste water generated i.e. 8 KLD. The treated water available is 5 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 up on 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.

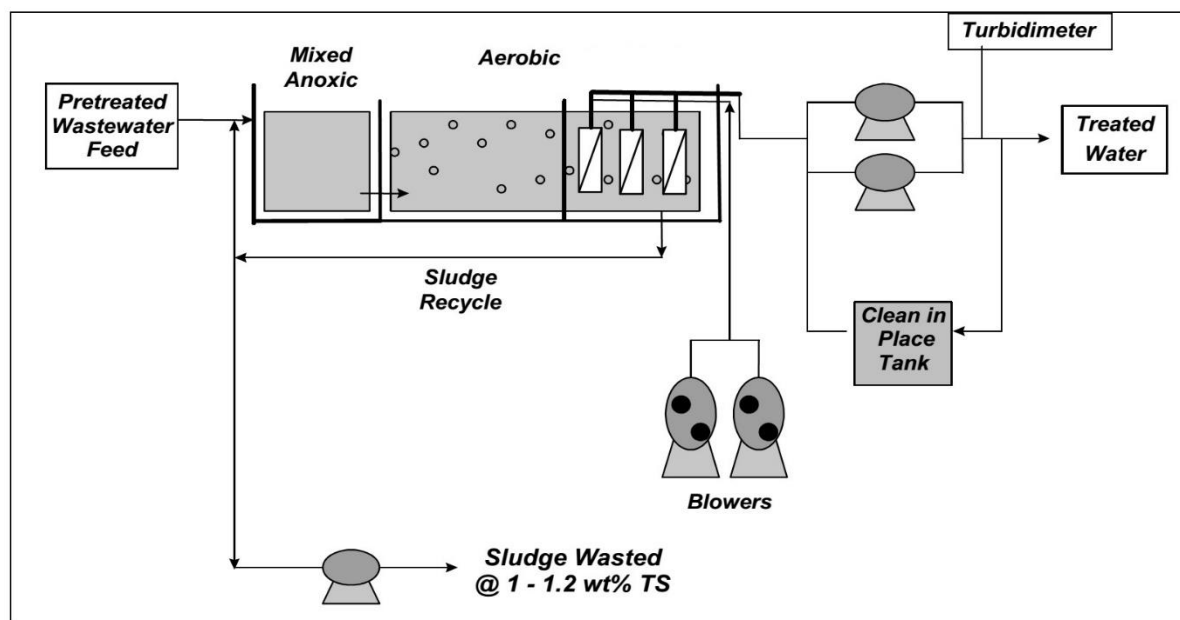


Figure 5: Schematic Diagram of MBR STP

9 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 45 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 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	31457.31	sq-mtr	
2	Green Belt Area	5525	sq-mtr	
3	Open & Paved Area	17350.64	sq-mtr	
	Total	54332.95		
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 Patna
Rainfall				
	Average Annual Rainfall	1076	mm/year	
	Hourly Peak Rainfall Intensity, I	45	mm/hour	
	Peak Time taken	15	minutes	
Total Volume of Water to be Captured on Annual Basis				$Q = A * c * I$
	Rooftop Area of Building/shed	28770.86	cu-m/year	
	Green Belt Area	891.74	cu-m/year	
	Paved Area	14001.97	cu-m/year	
Runoff Calculation for the Peak Rainfall, Q				
	Rooftop Area of Building/shed	300.81	cu-mtr/hour	RWH in India, MoEF&CC, e-book 2016
	Green Belt Area	9.32	cu-mtr/hour	
	Paved Area	146.40	cu-mtr/hour	
	Total	456.53	cu-mtr/hour	
Annual Recharge Potential				IMD
	Recharge Potential	43664.56	cu-m/year	
	Rainy Season	June-Sep		
Design of Recharge Structure for Peak Flow				
Calculation for One Pit				
	Diameter of Pit	4	mtr	
	Depth of the Pit	3.5	mtr	
	Volume of the Pit	43.98	cu-mtr	
Number of Pits Required to store the peak discharge		10.4		
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 ~750 KVA. The source of power will be supplied by State Electricity Board.

In case of power failure, 4 DG sets of each of capacity of (1 x 30 KVA, 1 x 400 KVA, 1 x 200 KVA, 1 x 85 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 400 KVA

$$H = h + 0.2 \sqrt{400}$$

$$H = h + 0.2 \times 20$$

$$H = h + 4$$

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

S. N	Category of Solid Waste	Waste Generation Rate	Formula	Total Pop.	Waste Generated	Bio-degradable	Non-biodegradable
1	Workers in ware house	0.3 to 0.6 kg/cap/day	Total Population *0.45	156	70.2	28.08	42.12
2	Visitors @ 15% of total population	0.1 to 0.3 kg/cap/day	Total Population *0.1	24	2.4	0.96	1.44
	Total				73	29	44

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.

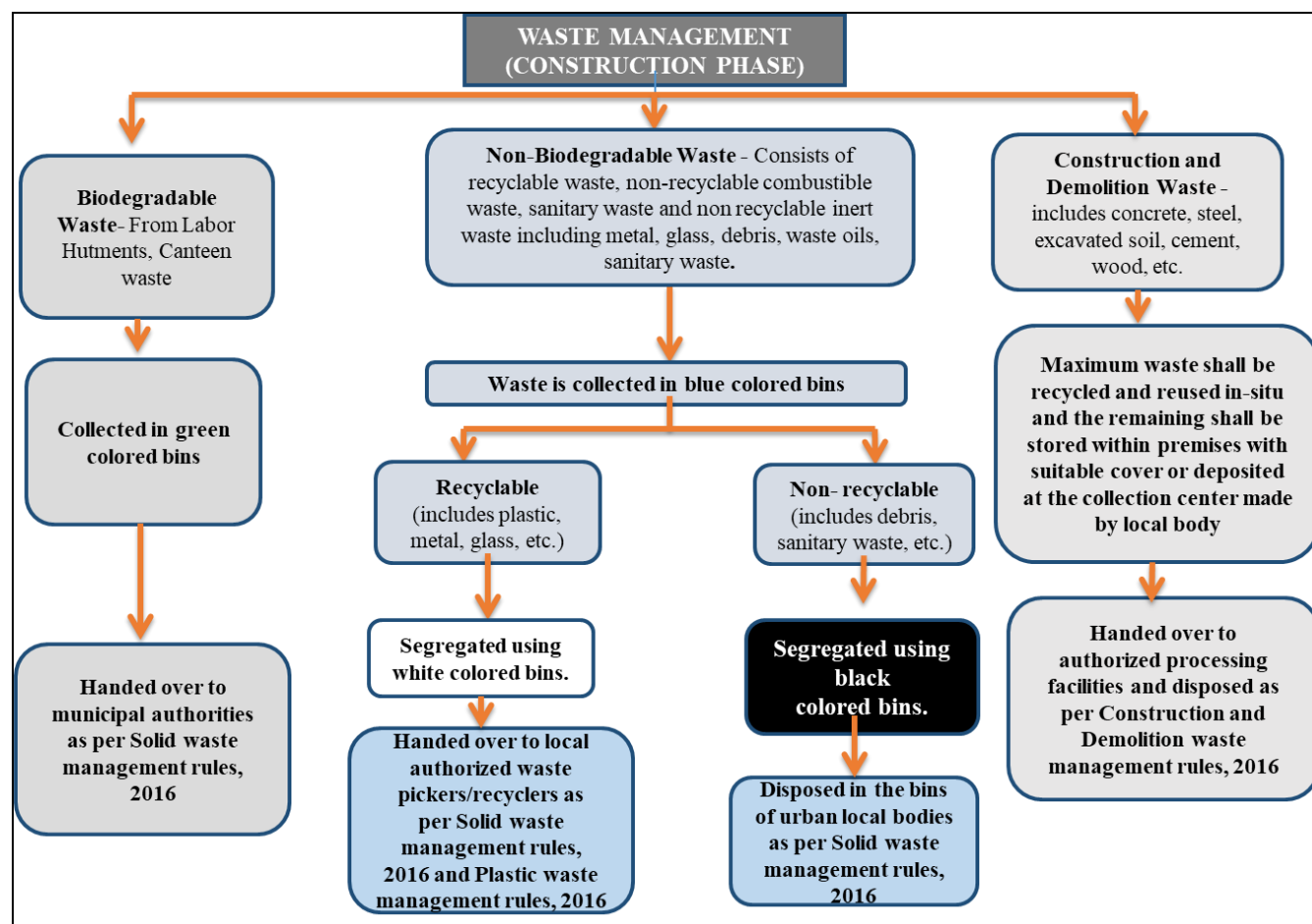


Figure-7: Solid Waste Management during Construction Phase

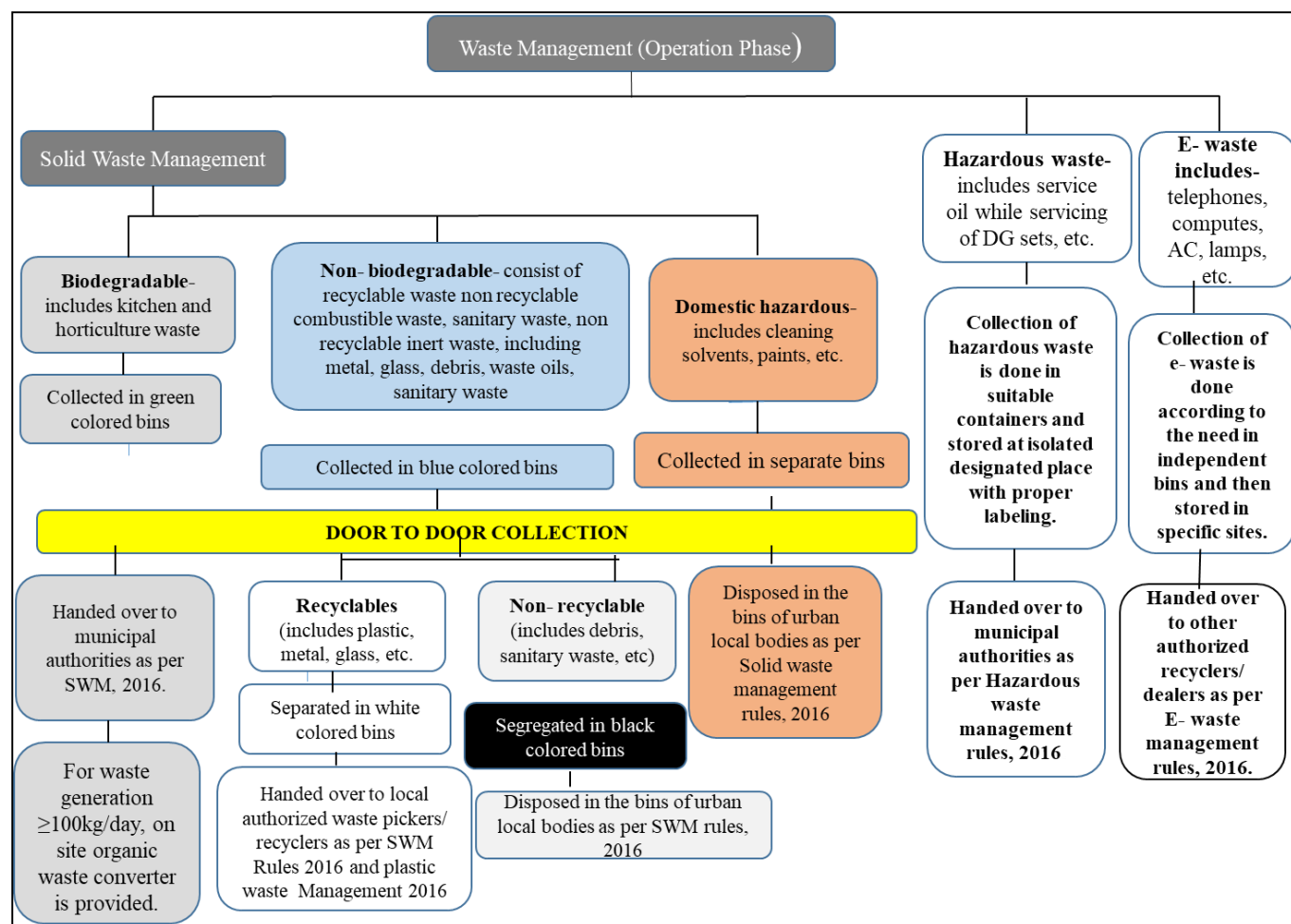


Figure-8: Solid Waste Management during Operation Phase

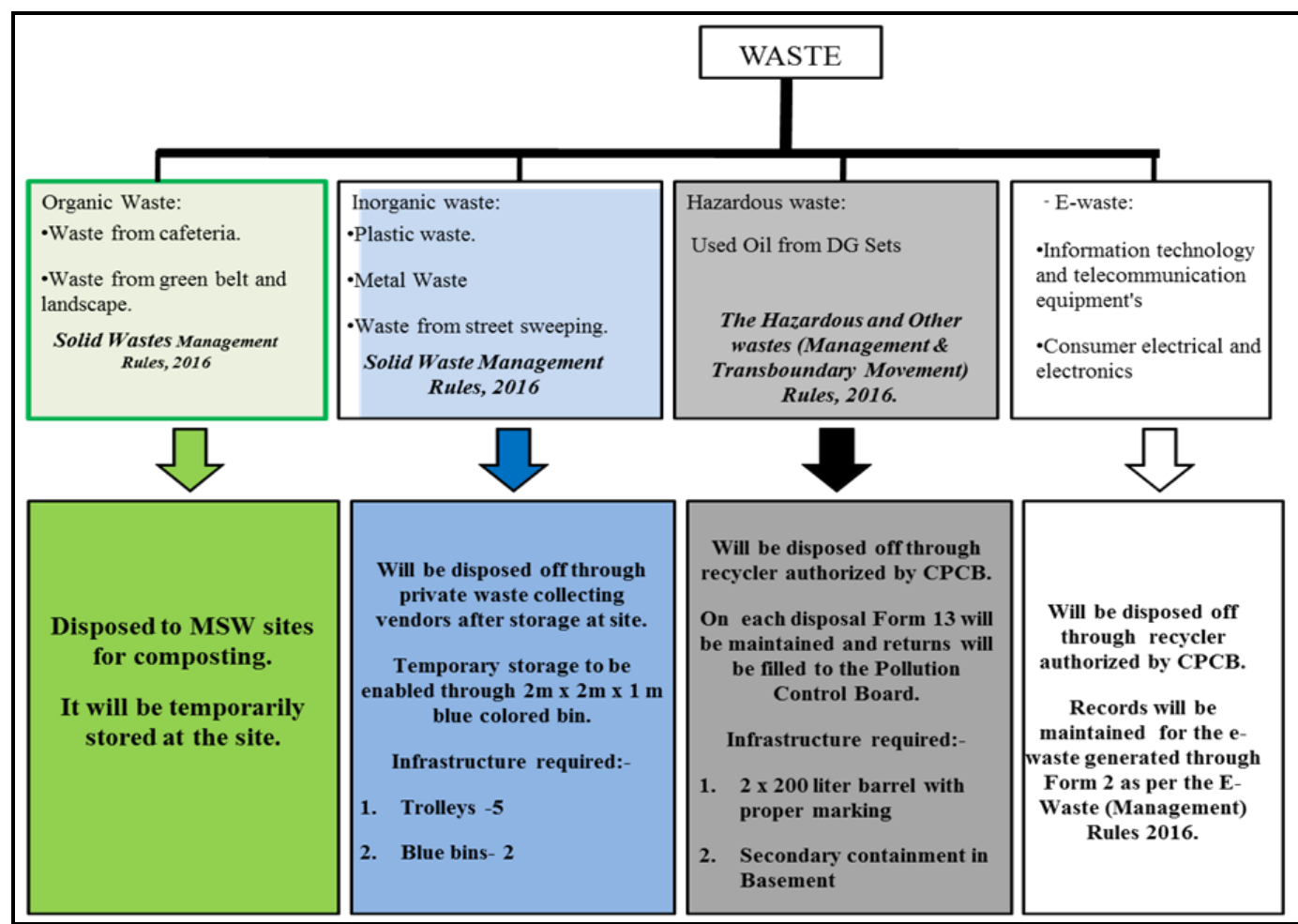


Figure-9: Hazardous Waste Management Plan

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)