

CONCEPTUAL PLAN

1.0 Project Background

The Proposed construction of Dular Enclave residential building by M/s Sita Construction Pvt. Ltd. is located at Plot no. 514, 516, 662, 663, 664 and 667, Khata no. 187, 207, 222, 228 and 293, Thana no. 17, Mauza- Sikandarpur, Danapur, District Patna, Bihar. The total plot area (land area) of the project is 8587.54 sq. m. and the total built up area is 24688.37 sq. m.

The proposed building will be designed and constructed within the designated site as per the defined building bye-laws and National Building Code 2016.

2.0 Salient Features of the Project

Sl. No.	Description	Quantity	Unit
Total AREA of the project			
1.	Existing plot area (A+B)	5073.00	SQMT
2.	Proposed plot area (C+D)	3514.54	SQMT
3.	Total plot area	8587.54	SQMT
4.	R/W area	36.31	SQMT
5.	Total plot area	8551.23	SQMT
6.	Total built up area (A+B) existing	12681.80	SQMT
7.	Total built up area for block C	8787.05	SQMT
8.	Total built up area for block D	3220.32	SQMT
9.	Total block (A+B+C+D) built up area	21468.15	SQMT
10.	E.W.S area 15% of total built up area	3220.22	SQMT
11.	Total built up area	24688.37	SQMT
12.	Total no. of flats in block (A+B+C+D)	280	
WATER			
1.	Total Water Requirement	223	KLD
2.	Fresh water requirement	129	KLD
3.	Treated Water Requirement	94	KLD
4.	Waste water Generation	161	KLD
5.	Proposed Capacity of STP	193	KLD
6.	Treated Water Available for Reuse	144.90	KLD

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7.	Used in Other construction site	50.9	KLD
RAIN WATER HARVESTING			
1	No of RWH of Pits Proposed	1	No.
PARKING			
1.	Total built up area	24688.37	SQMT
2.	Total required parking area (excluding 15% EWS built-up area) = (Built up area -15%) X 25%	21468.15	SQMT
	Required car parking area	2551.56	SQMT
3.	Basement parking area	2167.32	SQMT
4.	Ground floor parking area	538.29	SQMT
5.	Total Required Parking Area as per bye-laws	5367.08	SQMT.
6.	Provided parking area (Proposed)	2705.61	SQMT
7.	Provided parking area (Existing)	3571.26	SQMT
8.	Total provided parking area	6276.87	SQMT
9.	No. of Cars parking provision	314	Nos.
GREEN AREA			
1.	Required 10% Green Area of net land area	858.76	SQMT
2	Proposed Green Area	860.00	SQMT
ENERGY			
1.	Total Power Requirement (Existing)	200	KVA
2.	Total Power Requirement (Proposed)	200	KVA
3.	Total Power Requirement	400	KVA
2.	DG set backup	400	KVA
3.	No of DG Set	01	No.

3.0 Details of Parking Facilities

Proposed Parking Facilities:

S.No.	Particulars	Quantity	Unit
1.			
2.	Total required parking area= (Built up area -15%) X 25%		
3.	Required car parking area	2551.56	SQMT
4.	Basement parking area	2167.32	SQMT

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5.	Ground floor parking area	538.29	SQMT
6.	Provided parking area (Proposed)	2705.61	SQMT
7.	Provided parking area (Existing)	3571.26	SQMT
8.	Total provided parking area	6276.87	SQMT

4.0 Power Requirement, Source and Backup Arrangement

Power requirement is 400 kVA that will be met from Grid supply of Bihar State Power Holding Company Limited. 01 DG set of total capacity 400 kVA will be provided as backup power supply during power failure.

The details of power requirement, source, backup power arrangement (i.e. generators) during operation phase are given in the Table below.

Power requirement	400 KVA
Sources of power	Grid supply of Bihar State Power Holding Company Limited
Back-up power supply arrangement	Back-up DG set of total capacity 400 kVA
Stack height of DG	6 m above the terrace level of the building

5.0 Water Requirement, Source and Water Balance

In operation stage, total water requirement for the project will be 223 kld. The details of water requirement and its breakup, source of water and water balance are given in Table below. Out of the total water requirement, 129 kld will be fresh water met from the Borewell/tubewell, and the balance 94 kld will be met from recycle of treated wastewater from the onsite STP.

The sewage generated during the operation phase (161 kld) will be treated up to the tertiary level in the proposed on-site Sewage Treatment Plant (STP) of 193 kld capacity. The treated wastewater (94 kld) will be recycled/ reused for cooling, toilet flushing and horticulture in the project site. Therefore, during normal operations and rest treated water 50.9 kld will be given to nearby construction site.

Water Requirement during Operation Stage

S.No.	Description	BLOCK (A+B+C+D)	Units
1.	Total No of Units	280	
2.	No of person per Flat	5	

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3.	Total no. of persons	1400	
4.	Per capita water consumption per Person (LPD)	135	LPD
5.	Total Water Requirement Per Flat (LPD)	675	LPD
6.			
7.	Total Water Requirement (LPD) for Dweller	184275	
8.	or Say	184.275= 184	KLPD
9.	Dweller Domestic Water @ 70%	129	KLPD
10.	Dweller Flushing Water @ 30%	55	KLPD
11.	Visitor Domestic @ 200 * 5Ltr/day	1	KLPD
12.	Visitor Flushing @ 200 * 10 Ltr/day	2	KLPD
13.	Water Requirement for Gardening Purpose=860.00 Sq.Mt. @7Ltr/Sqm.	6.0	KLPD
14.	Miscellaneous Water Requirement (Car washing and road washing @5.0Ltr/ car and @7.0Ltr/ car)	30	KLPD
	Total	223	KLPD
REQUIREMENT OF TUBEWELL			
1	Source of water (Domestic) Tubewell	129000	LPD
STP CAPACITY CALCULATION			
1	Waste Water from Dweller Domestic Consumption@ 80%	103.20	KLPD
2	Waste Water from Dweller Flushing Consumption@100%	55.00	KLPD
3	Waste Water from Visitor Domestic Consumption@ 80%	0.80	KLPD
4	Waste Water from Visitor Flushing Consumption@100%	2.00	KLPD
5	Total Waste Water Generated	161.00	KLPD
6	Provide STP Capacity 20% Higher than The Required capacity	193.00	KLPD
7	Treated Water Generated from STP @ 90%	144.90	KLPD
8	Total Treated Water Used	94.00	KLPD

Water Source during Operation Stage

SN	Source	Quantity (kld)	% of Total Requirement
1	Fresh water from Borewell supply	129	57.84
2	Recycle of treated effluent from STP	94	42.16
	Total water source	223 KLD	100.0%

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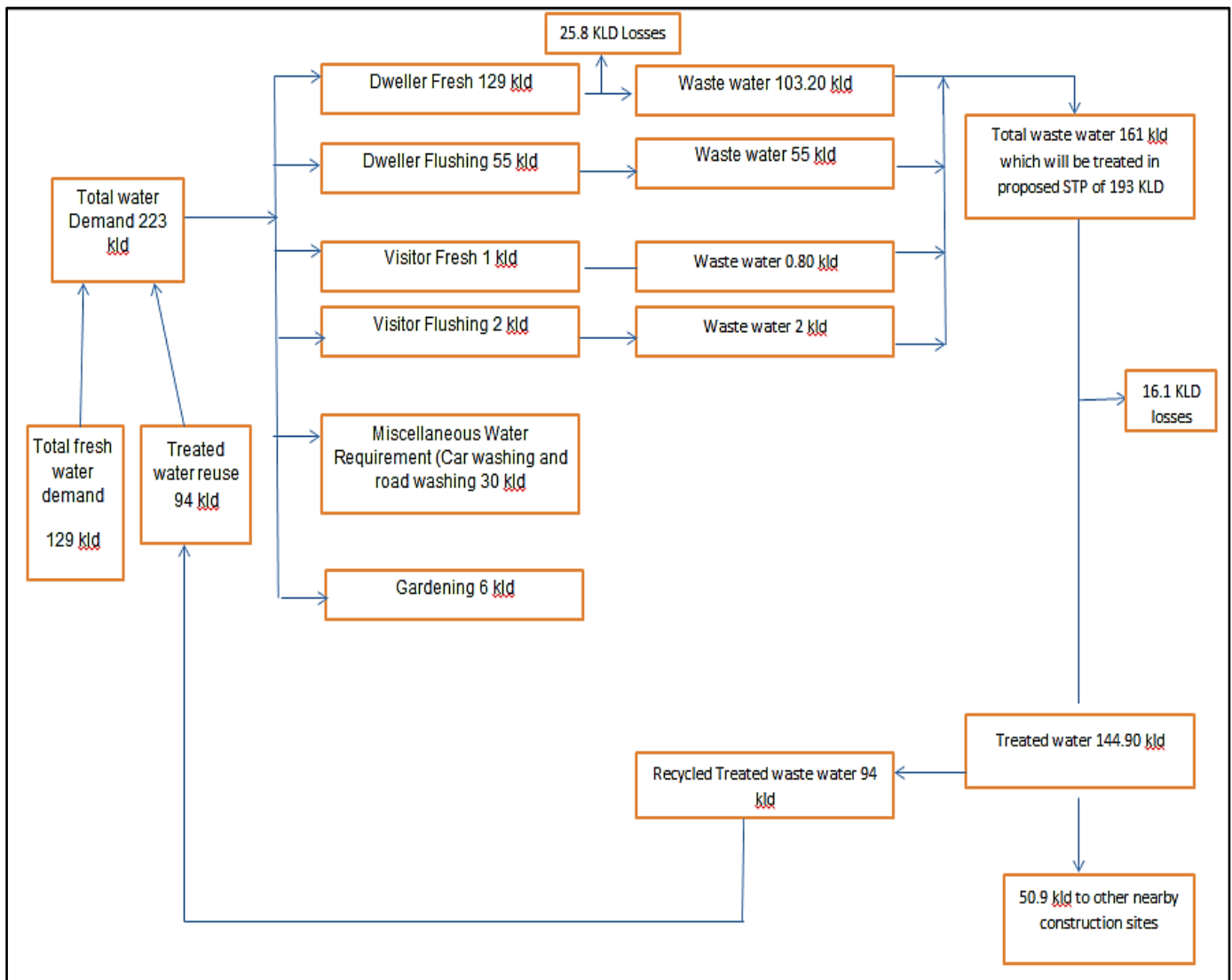


Fig. Water Balance Diagram

6.0 Rain Water Harvesting

Rainwater harvesting plan is as per the design approved in the manual issued by the GOI. Details of rainwater harvesting calculation are given below:

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RAIN WATER HARVESTING SYSTEM			
1	Total roof water area	758	SQM
2	10% green area	860	SQM
3	Road and paved area	5000	SQM
4	Total plot area	6618.00	SQM
RUNOFF COEFFICIENTS			
1	Total roof top	0.80	SQM
2	Green Area	0.20	SQM
3	Road & paved area	0.70	SQM
4	Total rain water discharge in m/hr=0.020 m/hr		
5	C= run off coefficient		
6	I= Intensity of rainfall(m/hr=CIA		
7	A= Area of catchment (in sqm.)		
8	For roof top area 0.020X758X0.80	12.128	Cu.Mt.
9	For Green area 0.020X860X0.20	3.44	Cu.Mt.
10	For road and paved area 0.020X5000X0.70	70.00	Cu.Mt.
11	Total	85.568	Cu.Mt./hr
12	Considered 15 minutes retention (Cum/hrx15m)	21.39	Cum
13	We are providing 3.0mx3.0mx3.0m deep. Rain water harvesting pit capacity of one harvesting pit	27.00	Cum
14	No of harvesting pit required	1	Nos.
15	We are providing 1 Nos recharge pit		

The rainwater will be collected through piped storm water drains and conveyed into rainwater harvesting system. All storm water drains will be designed for adequate size and slope such that there shall not be any flooding in the site. It shall be ensured that no wastewater shall enter into storm water drainage system.

7.0 Green Area and Number of Trees

No. of tree plantation required (50 tree per 10,000 m ² plot area for development) = 50* 8587.54 m ² plot area /10000 = 42.93 says 43	43
No. of tree plantation proposed	50

List of Proposed Tree Species

S. No.	Name of trees
1.	Arjun
2.	Mahua
3.	Neem

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4.	Paisar
5.	Salai

8.0 Sewage Quantity, Treatment, Reuse & Disposal

Quantity of sewage	161 kld
Collection of sewage	Sewage generated during the operation phase will be collected through underground sewerage system (pipe drain) for treatment in STP. Separate storm water drainage system will be provided for rain water.
Treatment of sewage	Sewage will be treated up to the tertiary level in the on-site Sewage Treatment Plant (193 kld capacity) based on MBBR technology. All parameters of the STP treated effluent shall be maintained as per EP Rules, 1986/ CPCB standards.
Reuse/recycle and Disposal of treated sewage	During normal operations, , as the entire treated sewage will be reused and recycled for cooling, horticulture and toilet flushing and balance will be given to nearby construction sites/municipal drain.
Location of the STP	Basement/ Underground within project site

9.0 Solid Wastes Collection, Recycle & Disposal

Nature	42 Kg/day solid waste will be generated during construction phase & 700 Kg/day Solid wastes generated during operation phase.
Collection and disposal	The municipal solid wastes generated from the project will be segregated into biodegradable waste, non-biodegradable waste, plastic waste, domestic hazardous waste and horticulture waste in separate bins as per Solid Waste Management Rules, 2016. The biodegradable wastes will be composted in onsite composting unit and the manure will be used for landscaping. The other segregated wastes will be disposed at designated site through authorized vendors as per local norms. Dewatered/ dried sludge from STP will be used as manure in horticulture.
Recycling	Recyclable wastes comprising paper, plastic, glass etc., will be disposed at designated site through to authorized vendors.

10.0 Energy Conservation Measures

Energy Efficient Features and Energy Conservation Measures:

- Maximum utilization of natural light.
- Energy efficient LED Lighting for entire development.

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- Use of solar lights in common areas.
- Appropriate design to reduce heat gain and loss.
- Roof-top thermal insulation and U-value of roof and external wall as per ECBC.
- Low U-value and low solar heat gain co-efficient (SHGC) for glazing glass as per ECBC.
- Window-to-Wall Ratio shall be 40% as per ECBC.
- Energy efficient high COP water cooled chillers with CFC free refrigerant.
- Energy efficient motors for AHUs, ventilation fans and cooling towers.
- Variable speed pumping system for chilled water distribution system.
- Selection of high efficiency fans for air handling units and ventilation system.
- Cooling tower selection for minimum drift and noise level; energy efficient motors.
- Power factor shall be maintained 0.98 or higher to reduce electrical power distribution losses.
- Use of timers and photoelectric sensors to switch ON/ OFF external landscape & facade lighting.
- Transformers shall have minimum no load losses as compared to conventional transformers.
- Pumps & equipment selected for energy efficient operation.
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Use of Solar Energy

Solar lights	Solar lights will be provided for streets, landscape area and common areas.
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Energy Efficient Building Materials:

- Use of ready-mix concrete containing fly ash or PPC which contains fly ash.
- Use of PPC (which contains minimum 15% of fly ash) in mortar and plaster.
- Use of PPC or fly ash based paving blocks/ tiles and pre-cast elements.
- Composite wood products such as hardboards, block-boards, plywood etc. made from recycled wood scrap & dusts.
- Fibrous gypsum plaster boards made from industrial wastes.
- Finished concrete flooring, ceiling tiles, ceramic tiles etc. which are made from low embodied energy products & recycled materials or from resource efficient finishes.

11.0 Fire Protection System

- Fire extinguishers.
- Hose reel and wet riser.
- Yard hydrants.
- Automatic sprinkler system in the building.
- Manually operated electric fire alarm system.

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- Automatic fire detection and alarm system.
- Underground and terrace level fire water storage tanks.
- Electric and diesel driven fire pumps.

12.0 Environmental Management Plan

Proposed Environmental Mitigation Measures

Area	Mitigation Measures
	Construction Stage:
Water quality	• Toilet and drinking water facilities for construction workers will be provided by the contractor at the construction site to avoid unhygienic condition at site. • Sewage from toilets at construction site will be collected and disposed STP through authorized tankers.
Air quality	• Barricades of sufficient height all along the project boundary will be erected to prevent dispersion of dust and noise • Regular sprinkling of water on roads and vulnerable areas of the construction site will be carried out for dust suppression. • Properly tuned construction machinery & vehicles in good working condition with low noise & emission will be used and engines will be turned off when not in use. DG sets to comply with emission norms & stack height regulations. • Construction materials will be properly stored at the storage yard with proper shades and covers located at the off-site. • Trucks carrying construction materials and debris will be suitably covered by tarpaulin and plastic sheets. • Use of mask by construction workers.
Noise level	• Enclosed/ canopy type DG sets will be used. • Protective gears such as ear mufflers etc. will be provided to construction personnel exposed to high noise levels.
Solid wastes	• Construction wastes will be recycled and excess construction debris will be disposed at designated places in tune with the local norms. • Municipal solid wastes from construction site will be disposed at designated dumping site through authorized vendors.
Landscape	• Appropriate landscape including plantation of evergreen and ornamental flowering trees, palms, shrubs and ground covers at open spaces within the complex will be done, which would serve the dual purpose of controlling fugitive dust and improving the aesthetics of the area.

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Health & Safety	- Personal protective equipment (PPE) and other safety measures will be provided to the construction workers as per occupational safety norms to prevent accidents/ hazards. - First aid and health checkup facility will be provided at the construction site.
Operation Stage:	
Water quality	- Sewage will be treated up to the tertiary level in the on-site STP. - Entire treated sewage will be reused for cooling, toilet flushing and horticulture. - Regular monitoring of STP and STP effluent quality will be carried out as per norms.
Air quality	- Back up DG sets will comply the applicable emission norms. - Adequate stack height for DG sets will be provided as per norms. - Back up DG sets will be used only during power failure. - Regular monitoring of emissions from DG sets and ambient air quality will be carried out as per norms.
Noise level	- DG sets will be installed in the basement to minimize the vibration and impact on ambient noise. - DG room will be treated acoustically as per norms to control the noise from DG sets. - Pumps, Compressors, DG sets etc. will be properly maintained for fuel efficiency and noise control. - Personal protective equipment will be provided to the maintenance staff working in high noise areas.
Solid wastes	- Solid wastes will be segregated into biodegradable & non-biodegradable components. - Biodegradable wastes will be composted in an on-site composting unit and the manure will be used for landscaping. - Non-biodegradable/ recyclable wastes will be disposed at designated dumping site through authorized vendors.
Hazardous waste	Used/spent oil from DG sets will be temporarily stored in an isolated area with proper marking & restriction and finally sold to registered recyclers as per HW rules.
Rainwater harvesting	Adequate rainwater harvesting pits will be provided for collection of rainwater and recharge into the groundwater.
Fire protection	- Adequate fire protection facilities will be installed including fire detectors, fire alarm and firefighting system as per National Building Code of India. - Firefighting training & mock drills will be conducted at regular intervals as per norms and safety manual

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Landscape	• Proper maintenance of landscape round the year including replacement of the decayed plants.
Health & Safety	• Adequate safety measures will be provided to the maintenance staff complying to the occupational safety manuals to prevent accidents / hazards. • First aid and health checkup facility will be provided at the building.
Others	• The building will be provided with disabled-friendly design, timber-free construction, energy efficient lighting & ventilation, and control of indoor environment. • Undertaking all necessary pollution control measures to maintain the emissions and discharges within the prescribed/stipulated limits.