

FORM-1 A

CHECK LIST OF ENVIRONMENTAL IMPACTS

(Project proponents are required to provide full information and wherever necessary attach explanatory notes with the Form and submit along with proposed environmental management plan & monitoring programme)

1. LAND ENVIRONMENT

(Attach panoramic view of the project site and the vicinity)

- 1.1 Will the existing landuse get significantly altered from the project that is not consistent with the surroundings? (Proposed landuse must conform to the approved Master Plan / Development Plan of the area. Change of landuse if any and the statutory approval from the competent authority be submitted). Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

M/s Simanchal Infratech Pvt. Ltd. proposed for establishment of Residential Building Project "Panorama Mangalam Tower". Due to proposed project, the site will accommodate multistoried building with residential flats with internal roads, service facilities, Parking and Green Area. Proposed project will be developed as per approved plan. Total 11004.72 Sqm. (Residential Block : 8356.22 Sqm. + EWS & LIG Block : 2648.50 Sqm.) and Total Built-up Area is 44930.07 Sqm. (FAR area 32575.24 Sqm. + Non FAR Area 12354.83 Sqm.). 588 nos. of residential flats (484 Nos. + 104 Nos. EWS/LIG Flats will be developed within Panorama Mangalam Tower Project.

Project land has been acquired under development agreement with land owners. The project is consistent with the surroundings of the project area. Surrounding area comprises of residential area, schools, offices and health care facilities. Proposed Project is coming up on own land of project proponent and land under Development Agreement between land owners and Developer at Pradhan Tola, Purnea, Mauza- Madhubani, Khata No. -840, Khesra No. - 1855, Thana No. - 123/1 Tauju No. - 8/5, Ward No. - 04 (New), Dist- Purnea, Bihar

Site Plan of proposed residential building project is enclosed herewith as Annexure – I.

Land Documents and Development Agreement copy is enclosed herewith as Annexure – II.

Total cost of the project will be approx. Rs. 50 Crores.

The Geo Co-ordinates of the project site are as under;

Corners	Latitude	Longitude
N	25° 46.480'N	87° 27.167'E
NE	25° 46.439'N	87° 27.185'E
S	25° 46.407'N	87° 27.173'E

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SW	25° 46.400'N	87° 27.142'E
NW	25° 46.477'N	87° 27.137'E

The various features in the vicinity of the project area are as follows;

East	NH 231, River Saura, Kosi canal
West	Rani Nagar, Airforce station
North	Pratap Nagar
South	Saura River

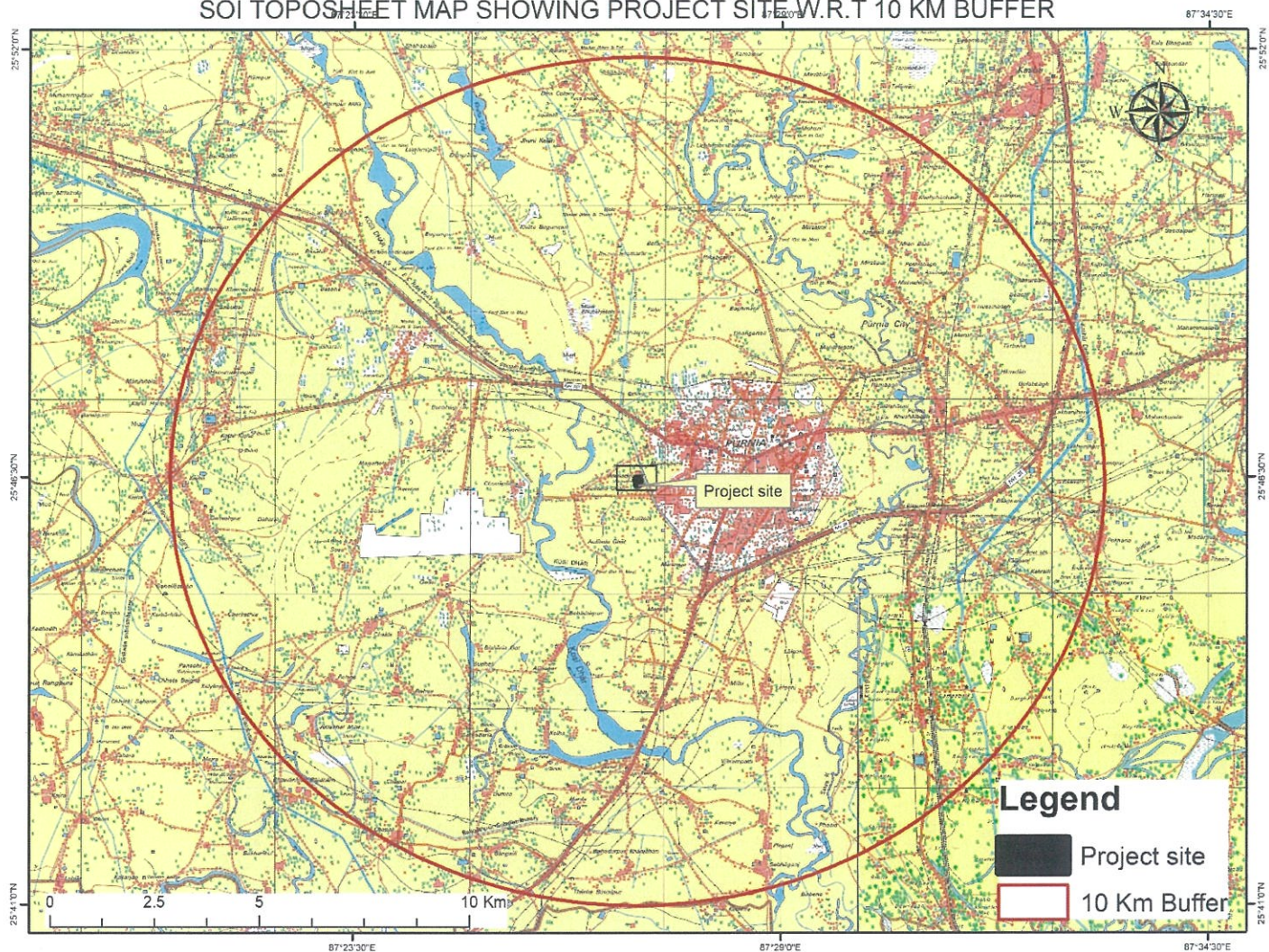
Topographical Map and Site & Surroundings location map of 500 m. radius area is shown hereunder;

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Fig. – 1 PROPOSED PROJECT SITE ON TOPOSHEET MAP

SOI TOPOSHEET MAP SHOWING PROJECT SITE W.R.T 10 KM BUFFER



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FIG. – 2 SURROUNDINGS LOCATION MAP OF 500 M. RADIUS AREA



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FIG. – 3 SITE PHOTOGRAPHS



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- 1.2 List out all the major project requirements in terms of the land area, built up area, water consumption, power requirement, connectivity, community facilities, parking needs etc.

Land & Area Details of Proposed Residential Plan (Tower I & Tower II) (Panorma Mangalam Tower) are as under ;

- **Total Plot Area: 11004.72 Sqm.** (Residential Block : 8356.22 Sqm. + EWS & LIG Block : 2648.50 Sqm.)
- **Total Built-up Area of Project: 44930.07 Sqm.** (FAR Area 32575.24 Sqm. + Non FAR area 12354.83 Sqm.). Details are as under ;

Sl. No.	Floors	Residential Towers (A)		LIG Towers (B)			EWS Towers (C)	
		Tower 1	Tower 2	Tower 1	Tower 2	Tower 3	Tower 1	Tower 2
		Area in Sqm.						
1	B	4783.52 (For parking)		NA	NA	NA	NA	NA
2	G	2649.13 (For parking)		NA	NA	NA	NA	NA
3	G	57.48	52.8	244.41	244.41	244.41	313.9	305.62
4	1	1623.20	1328.16	244.41	244.41	244.41	313.9	305.62
5	2	1623.20	1328.16	244.41	244.41	244.41	313.9	305.62
6	3	1623.20	1328.16	NA	NA	244.41	313.9	305.62
7	4	1623.20	1328.16	NA	NA	NA	NA	NA
8	5	1623.20	1328.16	NA	NA	NA	NA	NA
9	6	1623.20	1328.16	NA	NA	NA	NA	NA
10	7	1623.20	1328.16	NA	NA	NA	NA	NA
11	8	1623.20	1328.16	NA	NA	NA	NA	NA
12	9	1623.20	1328.16	NA	NA	NA	NA	NA
13	10	1623.20	1328.16	NA	NA	NA	NA	NA
14	11	1623.20	1328.16	NA	NA	NA	NA	NA
15	TOTAL	17912.68	14662.56	733.23	733.23	977.64	1255.6	1222.48
16. Built-up Area of Residential Tower(A) (FAR Area) (except Sl. No. 1 &2)							32575.24	
17. Built-up Area of LIG + EWS (C+D) (Non FAR Area)							4922.18	
18. Parking Area (in Basement & Ground Floor) (Sl. No. 1 &2) (Non FAR Area)							7432.65	
19. TOTAL BUILT-UP AREA (FAR & NON FAR Area)							44930.07	
20. Total No. of Structures (Buildings/Towers)							7 Nos.	
21. Total No. of Flats (484 Residential + 104 EWS/LIG)							588 Nos.	
22. Max ^m No. of Floors (excluding basement)							12 (B+G+11)	
23. Max ^m Height of Buildings							45 m.	
24. Green Belt Area (19.9 % of total land area)							2189	
25. Parking Area (Covered) for Residential Tower (26.84 %)							7432.65 Sqm.	
26. Parking Area (Open) for LIG/EWS Tower							300 Sqm.	

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- **Water Consumption:** The total fresh water requirement during 01st run for the proposed 'Panorama Manglam Tower' Residential building Project will be 423 KLD. Thereafter 195 KLD fresh water requirement and 228 KLD STP Treated Water. Toilet flushing, Car/Street Washing, Green belt & landscape irrigation and Fire fighting water requirement will be met by Treated Water from STP. The fresh water will be sourced through Borewells.
- **Power requirement:** 1800 kW through BSEB Grid
- **Connectivity:** The project site is located near Purnea Bypass connected with all major points of Purnea Town and connected to other parts of state and Country through NH 31 and NH 131 A. Purnea Rly. Station in the SE (7 Km.) from the project site is the nearest railway station. The nearest airport is Purnea Airport, at 3.5 km W from the project site.
- **Community facilities:** All community facilities like schools, market, educational institutions, banks, hospital etc. are located within 1-5 km. radius of Project area.
- **Parking Needs:** As per Bihar Building Byelaws an area of 6922.24 Sqm. is required as total parking area for proposed project (25% of Total Built-up Area excluding 15% service area). Total 7432.65 Sq. M (26.84%) will be provided for Parking Facility. Covered Parking will be provided in basement of the building apart from stilt and open parking. Parking provisions will be provided as per guidelines of Bihar Building Byelaws.

Parking Requirement / Provision	Details of the Parking Area
Parking Requirement as per Bihar Building Byelaws (25 % of total built-up area of Residential Area excluding 15% service area)	6922.24 Sq.M. (27688.96 * 25 %)
Parking Area Provision (26.84%)	Total Parking Area 7432.65 Sqm. Basement Parking : 4783.52 Sqm. Gr. Floor Parking : 2649.13 Sqm.
Parking Nos. of ECS	525 ECS
LIG & EWS Parking Area for 140 nos. 2-wheelers (@2 nos. per unit for 70 units)	300 Sqm. in Stilt and Open Area

1.3 What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? (Such as open spaces, community facilities, details of the existing landuse, disturbance to the local ecology).

Increased traffic volume & Water use are major impacts envisaged due to proposed Residential Building Project. There will be no disturbance to local ecology of the area, as waste water generated from the Residential Building Project will be treated in STP inside the premises & treated water will be reused within the premises for toilet flushing, car washing, irrigation of green areas, fire water tanks and balance treated water will be discharge to govt. Drains.

1.4 Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc may be given).

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The Soil of the study area has been developed under the dominant influence of river, vegetation and climatic factors. The site is clear and surface level is flat. Also, for execution of the proposed buildings piling activities will take place. Therefore, while executing the project, the existing ground level will be modified. But adequate measure will be taken to minimize the land disturbance of the project site and surrounding areas.

The area under study falls in Zone-IV according to the Indian Standard Seismic Zoning Map. Suitable seismic coefficients in horizontal and vertical directions respectively, will be adopted while designing the structures.

1.5 Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)

No intersection or alteration in natural drainage system envisaged due to Proposed Residential Building Project. Well planned storm water drainage has been designed to take care of internal storm water drainage. There is also plan of govt. drains in the surrounding areas, therefore, problem of water logging will not arise due to building project.

1.6 What are the quantities of earthwork involved in the construction activity-cutting, filling, reclamation etc. (Give details of the quantities of earthwork involved, transport of fill materials from outside the site etc.)

For the construction of different pillars and other architectural structures soil will be excavated. All the excavated soil will be used for filling of the site and for land leveling purposes and future green belt development activity.

1.7 Give details regarding water supply, waste handling etc during the construction period.

Water requirement during construction phase is expected to be about 10 m³/day, which will be met by govt. water supply or water tankers. Whatever waste will be generated during construction period will be used for filling purposes.

1.8 Will the low lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)

Not Applicable. As there is no low lying & wetlands areas at the proposed Residential Building Project area.

1.9 Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)

There is no such construction activity which can cause health hazard. However, generated waste will be sold to authorized vendors or reuse within project activities.

2.0 WATER ENVIRONMENT

2.1 Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.

The total fresh water requirement during 01st run for the proposed 'Panorama Mangalam Tower' Residential building Project will be 423 KLD. Thereafter 195 KLD fresh water requirement and 228 KLD STP Treated Water. Toilet flushing, Car/Street Washing, Green belt & landscape irrigation and Fire fighting water requirement will be met by Treated Water from STP. The fresh water will be sourced through Borewells. Water Budget & Water Balance for the Building Project are shown here as under;

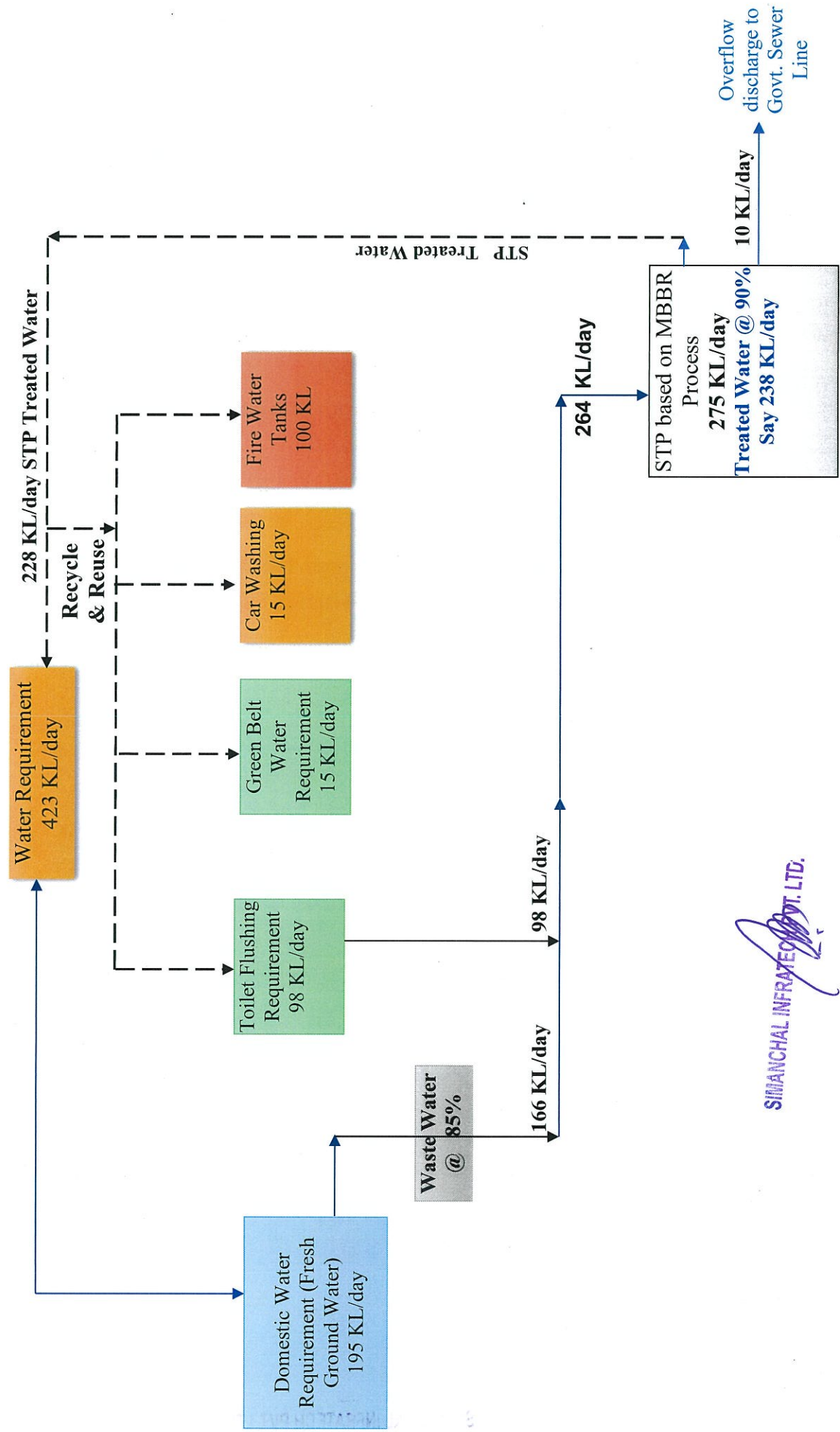
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Components	Occupancy / Area	Requirements as per MoEF / NBC Guidelines			Actual Requirement in KLD
		Domestic (Fresh Water) Requirement	Flushing (Treated Water) Requirement	Total Requirement	
Residential Flat (484 Nos.) Occupancy	1694 Nos.	90 Ltr./day/head	45 Ltr./day/head	135 Ltr./day/head	229 (Domestic 153 & Flushing 76)
EWS/LIG (104 nos.) Occupancy	416 Nos.	90 Ltr./day/head	45 Ltr./day/head	135 Ltr./day/head	56 (Domestic 37 & Flushing 19)
Visitors	425 Nos.	10 Ltr./day/head	5 Ltr./day/head	15 Ltr./day/head	6.4 (Domestic 4.3 & Flushing 2.1)
Security & Maintenance Staff	30 Nos.	25 Ltr./day/head	20 Ltr./day/head	45 Ltr./day/head	1.6 (Domestic 1 & Flushing 0.6)
Total					293
a. Total Water Requirement for Drinking and Domestic Use (Fresh Water)					195
b. Toilet Flushing Water Requirement (STP Treated Water)					98
c. Horticulture, Landscaping & Miscellaneous (STP Treated Water)					15
d. Street /Car Washing (STP Treated Water)					15
e. Fire Fighting Tanks (STP Treated Water)					100
TOTAL WATER REQUIREMENT (a+b+c+d+e) , max^m.				423 KLD max^m.	


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WATER BALANCE FOR “PANORAMA MANGALAM TOWER” (RESIDENTIAL) PROJECT



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2.2 What is the capacity (dependable flow or yield) of the proposed source of water?

Fresh water will be sourced through water tankers from PHED to meet the overall water requirement of the proposed construction activity. During operation phase water requirement will be met through proposed borewell inside premises.

2.3 What is the quality of water required, in case, the supply is not from a municipal source? (Provide physical, chemical, biological characteristics with class of water quality)

Fresh water will be sourced through Bore wells within premises. Ground Water Characteristics of the project area (from adjacent premises borewell) is enclosed herewith.

2.4 How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)

Approximately 228 KLD treated sewage will be reused for toilet flushing, car/street washing, irrigation of landscape & green belt within premises & Fire water tanks. Balance treated water will be discharged to govt. drains.

2.5 Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)

No, there will not be any diversion of water from other users because water will be extracted through borewells within premises.

2.6 What is the incremental pollution load from wastewater generated from the proposed activity? (Give details of the quantities and composition of wastewater generated from the proposed activity)

Approx. 264 KLD waste water will be generated from the proposed Residential Building Project. All waste water generated will be treated in STP and reused for toilet flushing, car/street washing, landscape irrigation & Fire water storage tanks. Characteristics of effluent from proposed building project will be as under;

Parameters	Expected Conc ⁿ of Generated Effluent from proposed Project
pH	6.5 - 7.5
Suspended Solids mg/l.,	150 – 200 mg/l.
BOD (3 days at 27°C), mg/l.	50-150 mg/l.
COD, mg/l.	150-500 mg/l.
Oil & Grease, mg/l.	5-10 mg/l.
Faecal Coliform	2500-3000 MPN/100 ml.

2.7 Give details of the water requirements met from water harvesting? Furnish details of the facilities created.

No water requirement will be met from rain water harvesting in the proposed building Project.

Rather, rain water from the roof of the proposed buildings will be collected and discharged into ground water aquifer through recharge pits.

RAIN WATER HARVESTING POTENTIAL OF PROPOSED BUILDING PROJECT :-

Type of Area	Area is SQM	Run-Off Coefficient	Annual Avg. Rainfall in m.	RWH Potential (m ³)
Roof Area	3331.18	0.80	1.59	4237.26

2 Nos. of Recharge Pits (Size: 10.0 X 2.50 X 3.50) will be provided within this building project to recharge ground water aquifer.

2.8 What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long term basis? Would it aggravate the problems of flooding or water logging in any way?

The proposed project will not cause any adverse impact on runoff characteristics. All the drains within the proposed Residential Building Project will be connected with main govt. drain outside the premises. Further, Rainwater harvesting scheme is proposed to collect the rainwater falling within the project premises which will be used for groundwater recharge. Proposed building Project will not aggravate the problems of flooding or water logging in any way as there will be proper drainage network within the premises for storm water management which will be finally connected to govt. drain.

2.9 What are the impacts of the proposal on the ground water? (Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)

- Ground water will be abstracted through borewells.
- Ground Water depth of the area is approx. 2.15 - 3 m. bgl during pre monsoon & 2.15 – 2.81 m. bgl during Post monsoon. (Source: CGWB Data)
- Annual Rain Water Harvesting Potential: 4237.26 M³
- Project area falls under Safety Category as per GWRE 2024 of CGWB.

2.10 What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)

The following control measures will be adopted in order to minimize the construction impacts on water quality :

- Appropriate sanitation facilities will be provided for the labours to reduce impact on water quality.
- No construction wastewater will be discharged directly on land or into the river. A couple of Sediment traps with retention period of half an hour will be constructed during the construction stage, where all construction wastewater will be collected. After the sedimentation of the construction wastewater, the comparatively cleaner water may be reused for wetting of building materials & structures.

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2.11 How is the storm water from within the site managed? (State the provisions made to avoid flooding of the area, details of the drainage facilities provided along with a site layout indication contour levels)

Storm water from the proposed Residential Building Project will be discharge to govt. drains. There will be properly designed drain network within the proposed project. Premises which will be finally connected to govt. drain.

2.12 Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)

No, as most of the construction labours are from local areas. However, following measures will be adopted to avoid unsanitary conditions around the project site;

- Proper on-site sanitation facilities will be provided for the construction labourers so as to avoid defecation in and around project site.
- Temporary Toilets comprising lavatory, bath, hand-wash facilities will be constructed inside the project site.
- Moreover, adequate water supply for drinking and other domestic uses will also be provided during the construction stage of the project.

2.13 What on-site facilities are provided for the collection, treatment & safe disposal of sewage? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)

Approx. 264 KLD domestic effluent will be generated from the proposed Residential Building Project "Panorama Mangalam Tower". All these effluents will be sent to 275 KLD capacity STP inside premises for treatment. The process of treatment is as under;

275 KLD Sewage Treatment Plant (STP) based on MBBR (Moving Bed Bio Reactor) Technology will be installed. Operation details of proposed MBBR technology STP are as under;

Preliminary Treatment: The treatment will include the following unit / equipment;

- o Screen Chamber
- o Oil & Grease Trap
- o Raw Sewage Collection Tank
- o Raw Sewage Transfer pumps

Biological Treatment (Secondary Treatment): This will include the following;

- o MBBR Bioreactor
- o Secondary Clarifier
- o Sludge Dewatering System-(Filter press)

Tertiary Treatment: The treatment will include the following unit / equipment;

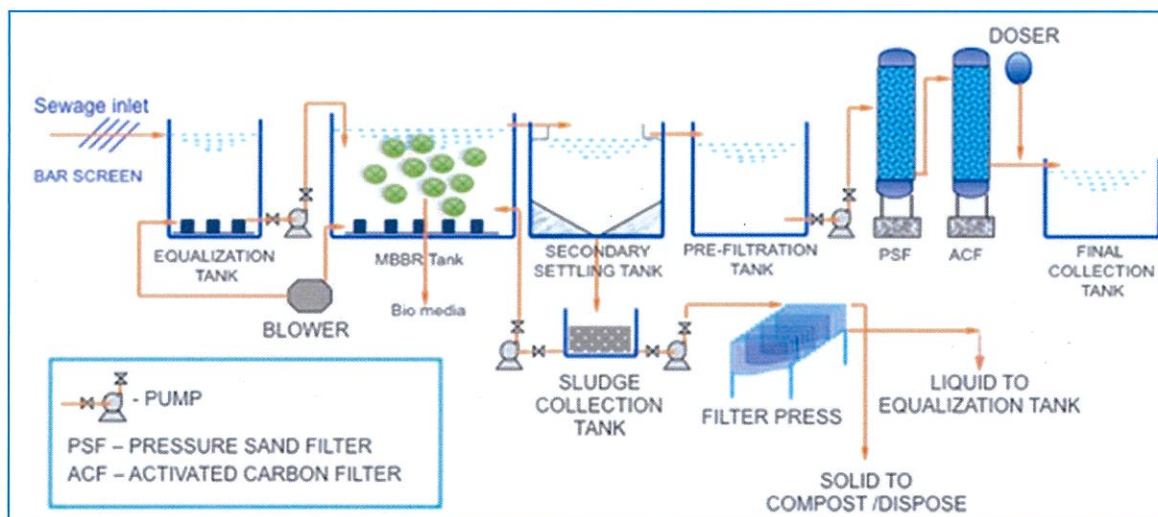
- o Filter feed pumps
- o Pressure Sand Filter (PSF)
- o Activated Carbon Filter (ACF)
- o UV system

The clear supernatant from the Secondary clarifier will be collected in a Filter feed tank this tank will be provided with level switch for unmanned operations. The treated sewage will be pumped to MGF followed by ACF. After ACF treated sewage will be passed through UV filtration for disinfection. After UV filtration treated sewage will be collected in Treated Water Tank.

The treated effluent will be of suitable quality for use as flushing, car washing landscape irrigation & fire water tanks. Treated water Characteristics will be as under;

Parameter	Treated Wastewater Characteristics	Standards as per MoHUA (Dt: 18.12.23)
1. pH	6.5 – 8.5	5.5 – 9.0
2. BOD 3 day, 27 °C	< 10.0 mg/l.	10.0 mg/l.
3. Total Suspended Solids	< 20.0 mg/l.	20.0 mg/l.
4. COD	< 50.0 mg/l.	50.0 mg/l.
5. Total Nitrogen	< 10.0 mg/l.	10.0 mg/l.
6. Total Phosphorus	< 1.0 mg/l.	1.0 mg/l.
7. Faecal Coliform	< 200 per 100 ml.	< 230 per 100 ml.

STP SCHEMATIC FLOW DIAGRAM



2.14 Give details of dual plumbing system if treated waste used is used for flushing of toilets or any other use.

98 KLD of treated water from STP will be recycled and reused for toilet flushing by dual plumbing system.

3.0 VEGETATION

3.1 Is there any threat of the project to the biodiversity? (Give a description of the local ecosystem with its unique features, if any)

There will not be any kind of threat due to the proposed project on the biodiversity of the area, as the area is identified as residential area as per Master Plan of Govt. of Bihar. The area is predominantly residential in nature. No sanctuary / forest is situated within 10 km. radius. Neither any rare or endangered species have been recorded in the project influence area (500 m. radius). So considering the type and nature of project and commonly found flora and fauna within the project influenced area, no adverse effects are envisaged on the ecology of the region.

3.2 Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)

No, the establishment of Proposed Residential Building Project will not involve clearing or modification of vegetation as there is no vegetation present at the project site and the land use around the project site is residential in nature.

3.3 What are the measures proposed to be taken to minimize the likely impacts on important site features (Give details of proposal for tree plantation, landscaping, creation of water bodies etc along with a layout plan to an appropriate scale)

In the proposed Building Project trees will be grown to the maximum extent possible in the strip of open land surrounding the buildings. 2189.93 Sq. M. area on ground will be developed and maintained for green belt within the project premises. Mostly native species will be planted. Decorative trees and hedges will be provided along pedestrian pathways.

4.0 FAUNA

4.1 Is there likely to be any displacement of fauna- both terrestrial and aquatic or creation of barriers for their movement? Provide the details.

No, proposed project is coming up in an area which is already populated and identified as Residential area in Master Plan of Govt. Therefore, there is a very less probability for the displacement or any other effect on the local fauna.

4.2 Any direct or indirect impacts on the avifauna of the area? Provide details.

In the proposed Building Project, Green belt & landscaping will be developed and various species are planted to create a clean, healthy and aesthetic environment within the premises. Common native variety of trees and ornamental flowering species will be planted in the green belt. Landscaping can have direct positive impact on the local avifauna, as this will provide shelter to local birds.

4.3 Prescribe measures such as corridors, fish ladders etc to mitigate adverse impacts on fauna

Not Applicable for this Project

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1.0 AIR ENVIRONMENT

5.1 Will the project increase atmospheric concentration of gases & result in heat islands? (Give details of background air quality levels with predicted values based on dispersion models taking into account the increased traffic generation as a result of the proposed constructions)

In the “Proposed Residential Building Project, Panorama Mangalam Tower, DG Sets & vehicular traffic movement are the major sources of air pollution. DG sets will be equipped with exhaust muffler with adequate stack height of 3.5 m. above the roof of buildings where DG Set will be installed as per CPCB norms. Project surroundings are similar in nature and there are no major industries located with 5 Km. radius of the proposed Project.

Background Ambient Air Quality of the project site area was monitored at three locations within project area on 02.12.2025. The average values are as under; (Test Report enclosed as Annexure - VI);

Parameters	24 Hrs. Average Conc. in $\mu\text{g} / \text{m}^3$	Limit as per NAAQS Nov.'2009
1. Particulate Matter (PM_{10})	78.2	100 $\mu\text{g} / \text{m}^3$
2. Particulate Matter ($\text{PM}_{2.5}$)	42.9	60 $\mu\text{g} / \text{m}^3$
3. Sulphur Dioxide as SO_2	12.7	80 $\mu\text{g} / \text{m}^3$
4. Nitrogen Dioxide as NO_2	31.1	80 $\mu\text{g} / \text{m}^3$

Current traffic survey data near project site is as under ;

Time (Hrs.)	TYPE OF VEHICLE			
	2 Wheelers	3 Wheelers	4 Wheelers & LCV's	HCV's
06-07	64	34	40	25
07-08	82	50	43	22
08-09	94	60	47	18
09-10	118	88	62	13
10-11	128	79	64	13
11-12	163	91	70	9
12-13	162	64	65	15
13-14	137	82	73	19
14-15	185	103	78	16
15-16	189	112	85	17
16-17	222	84	88	19
17-18	208	94	72	13
18-19	177	87	64	12
19-20	137	82	70	19
20-21	92	74	55	13
21-22	65	67	47	20
22-23	52	54	38	15
23-24	41	46	32	18
00-01	32	34	26	20
01-02	19	15	17	25
02-03	8	10	8	22

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Time (Hrs.)	TYPE OF VEHICLE			
	2 Wheelers	3 Wheelers	4 Wheelers & LCV's	HCV's
03-04	25	20	14	19
04-05	35	25	29	19
05-06	44	31	34	22
TOTAL	2479	1468	1221	423

Due to proposed Residential Building Project there will be increment in traffic density in the project area. Incremental Traffic Scenario will be as under;

Type of Vehicle	Present Scenario	Increment in Traffic Load due to Proposed Building Project
HTV (Trucks, Tractors etc.)	423	8
MTV (Car & Jeeps)	1221	198
LTV (Two & Three Wheelers)	3965	230

Existing Pollution Load (based on CPCB Document CUPS/10/1982-83) due to traffic density of project area is as under;

Type of vehicle	Total No. of vehicles / Day	Pollution Load (Kg./Day)				
		CO	HC	NO ₂	SO ₂	SPM
HTV (Trucks, Tractors etc.)	423	3.9	0.64	6.4	0.47	0.23
MTV (Diesel based 4 Wheelers)	481	0.42	0.12	0.38	0.16	0.18
MTV (Petrol based 4 Wheelers)	740	22.7	3.39	1.84	0.05	0.20
LTV (2 & 3 Wheelers)	3965	53.0	31.2	0.24	0.08	0.64
TOTAL		80.02	35.35	8.86	0.76	1.25

Incremental Pollution Load (based on CPCB Document CUPS/10/1982-83) due to movement of vehicles during Operation Stage of proposed Residential Building Project will be as under;

Type of vehicle	Total No. of vehicles / Day	Pollution Load (Kg./Day)				
		CO	HC	NO ₂	SO ₂	SPM
HTV (Trucks, Tractors etc.)	431	4.2	0.68	6.9	0.51	0.26
MTV (Diesel based 4 Wheelers)	579	0.45	0.14	0.40	0.19	0.21
MTV (Petrol based 4 Wheelers)	840	24.9	3.42	1.88	0.09	0.24
LTV (2 & 3 Wheelers)	4195	55.3	31.4	0.27	0.10	0.67
TOTAL		84.85	35.64	9.45	0.89	1.38

5.2 What are the impacts on generation of dust, smoke, odorous fumes or other hazardous gases? Give details in relation to all the meteorological parameters.

During construction period major sources of dust & smoke are Vehicular movement & construction activities. To mitigate these effects regular water sprinkling will be done all around the construction area and building materials will be stored in covered area by way of covering them with tarpaulin or keeping them in temporary makeshift sheds.

During Operation stage of proposed Residential Buildings, Dust & smoke will be emitted due to operation of DG Sets & vehicular traffic movement which will be minimized and controlled

through in-built exhaust muffler & acoustic enclosures in DG Sets & regular water spraying all around the premises.

1670.50 Sq. M area on ground will be developed and maintained for green belt within the project premises. Regular Water Spraying will be done all around the project premises to minimize dust emissions.

Meteorological Condition (Source IMD Data) of Project area is as under;

The temperature variations in the study area are as under :

Period	Min ^m . Temperature	Max ^m . Temperature
Mar. – June	12 °C – 20 °C	34 °C – 40 °C
Jul. – Oct.	15 °C – 23 °C	31 °C – 35 °C
Nov.- Feb.	6 °C – 10 °C	16 °C – 24 °C

Rainfall in Study Area:

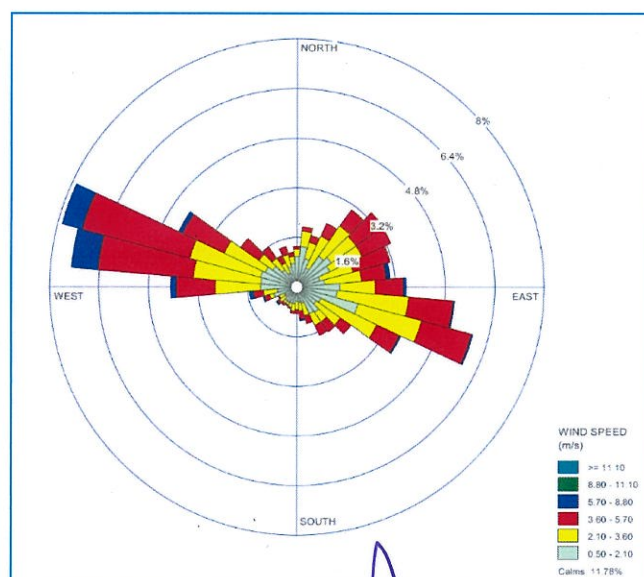
Year	Rainfall in mm.
2018	1207.9
2019	1545.7
2020	2461.7
2021	1413.7
2022	1357.9
Average Rainfall	1597.38 mm.

Source: imd.gov.in

Wind Direction and Velocity:

Season	Direction	Maximum Velocity
Mar. – June	SE to SW	5 – 15 km/hr
Jul. – Oct.	NE to SW	2 – 20 km/hr
Nov.- Feb.	NW to SE	1 – 12 km/hr

Wind rose is as under;



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5.3 Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.

As per Bihar Building Byelaws an area of 6922.24 Sqm. is required as total parking area for proposed project (25% of Total Built-up Area excluding 15% service area). Total 7432.65 Sq. M will be provided for Parking Facility. Covered Parking will be provided in basement of the building apart from stilt and open parking. Parking provisions will be provided as per guidelines of Bihar Building Bylaws.

5.4 Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.

Keeping a long-term perspective and movement of traffic (cars and two-wheelers predominantly), internal roads has been planned in the proposed Residential Building Project. Arrangement for Streetlights will be provided all along the roads and junctions.

5.5 Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.

There will be marginal increase in traffic noise & vibrations due to proposed residential building project as the project site is located in well developed area with heavy traffic density.

Noise level will be minimized through development of green belt all around the project premises.

5.6 What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details.

Noise will be generated by DG sets when they are operating, operation of compressors and water pumps.

It shall be ensured that the DG sets to be installed shall comply Notification No. G.S.R. 371(E), dt: 17th May'2002 for emission limits for new diesel engines (> 1000 KVA) for genset applications, issued by Ministry of Environment & Forests, Govt. of India. As per this notification, the acoustic enclosure for new DG Sets with rated capacity more than 1000 KVA, manufactured on or after the 01st Jul.'2003 shall have an insertion loss of 25 dB(A).

The DG Set will have an acoustic enclosure and an exhaust muffler, which will ensure a minimum of 25 dB(A) insertion loss. The design is in such a manner that within the proposed premises the noise level will be limited to 45-50 dB(A). This criterion is also essential from occupants & visitors comfort point of view.

Plantation and landscaping will be designed to ensure that there will be green belt all around the project premises so that further noise attenuation is achieved.

Overall design of facilities, equipment, layout and landscaping is done with a view to maintain noise level within Ambient Noise Level standards for Residential Areas.

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Director

6. AESTHETICS

6.1 Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?

No, the maximum height of the Residential Building Project will be 45 m. maxm. only upto roof top water tank from G.L. Open spaces according to the municipal building rules are being provided.

6.2 Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?

There will be not any adverse impact of this project on existing structures as all other existing structures are similar in nature.

6.3 Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.

The proposed project will be developed by abiding the local building bylaws and regulations set by the regulatory authority of the area.

6.4 Are there any anthropological or archaeological sites or artefacts nearby? State if any other significant features in the vicinity of the proposed site have been considered.

No there are no such structures within 5 km. radius of the project area.

7. SOCIO-ECONOMIC ASPECTS

7.1 Will the proposal result in any changes to the demographic structure of local population? Provide the details.

Yes, the proposed Residential Building Project will definitely change the demographic structure of the area as 1694 nos. of people will be added due to proposed building project.

7.2 Give details of the existing social infrastructure around the proposed project.

The proposed project is located in a developed Residential area. The area is well connected with roads to all the important places of city. However, all the basic needs & amenities are available within the 1 – 5 Km. radius of the project site.

East	NH 231, River Saura,Kosi canal
West	Rani Nagar, Airforce station
North	Pratap Nagar .
South	Saura River

All social infrastructure facilities i.e. Hospitals, Clinics, Banks, Post Offices etc. exists within 1 – 5 Km. of proposed project area.

7.3 Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?

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No, the proposed project will not cause any adverse effects on local communities, disturbance to sacred sites or other cultural values. Rather, it will provide economic development / business opportunities. Panorama Mangalam project will also generate indirect employment opportunities in the form of retail shops, security guards, servants, helpers, cleaners, washer men, electrician etc.

8. BUILDING MATERIALS

8.1 May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)

All building materials to be used in the construction of proposed Building project are of high embodied energy content. (Aluminium 200-250 Gj/tonne, Steel 30-60 Gj/Tonne, Glass 12-25 Gj/Tonne, Cement 5-8 Gj/Tonne, Lime 3-5 Gj/Tonne).

As energy conservation measures sun dried pavers will be used for making paved path, instead of baked pavers as they are manufactured from energy efficient processes. Non toxic Paints and Fly ash products may be used as per availability in the region.

8.2 Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?

Noise during the construction phase is expected due to operation of construction equipment, material and vehicular movement. The expected noise levels will be in the range of about 60 – 70 dB(A), though close to the construction site. Construction equipment and vehicles will be provided with mufflers and silencers thereby reducing the noise levels. Also, no major noise generating activity will be carried out during night to maintain the ambient noise standards.

All building materials carrying vehicles will be covered with tarpaulin or polythene sheets to avoid spreading of dust and dirt. Separate raw material handling yard will be made. Cement will be separately stored under cover bales. Sand will be stacked neatly under tarpaulin cover. All material transportation will be done during the off peak hours only. Raw material handling yard will be located within the project site and separated by enclosures.

Noise during the construction phase is expected due to operation of construction equipment, material and vehicular movement. The expected noise levels will be in the range of about 60 – 70 dB(A), though close to the construction site. Construction equipment and vehicles will be provided with mufflers and silencers thereby reducing the noise levels. Also, no major noise generating activity will be carried out during night to maintain the ambient noise standards.

8.3 Are recycled materials used in roads and structures? State the extent of savings achieved?

Recycled materials from outside may be used in roads and land development activities. These materials will be used as fillers in base and sub-base of the carriageway, footpaths pavements or pedestrian way.

Depending upon the situation 5 to 10% savings may be achieved by using recycled materials.

8.4 Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.

The collection, transportation and disposal of the solid waste generated during the operation phase of the proposed Residential Building project will be done as per the Municipal Solid Wastes (Management & Handling) Rules, 2016 (MSW Rules).

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Construction Phase: Municipal solid waste – 50 kg/day.

Operation Phase: Municipal solid wastes – 1120 kg/day. 880 Kg./day Biodegradable waste and 239 Kg/Day Non Biodegradable waste will be generated. The solid waste includes paper, card board, plastic cans etc. and kitchen wastes from houses. Recyclable wastes like card boards and plastic cans will be sold to vendors.

These generated solid wastes will be first segregated as plastic, glass, paper and other waste separately and disposed off as per MSW Rule, 2016. The plastic, glass and paper waste may be collected by private vendors for recycling. Sludge generated from STP (after drying) will be filled in HDPE bags and used as manure for gardening purpose.

All biodegradable and non-biodegradable waste will be handled as per Municipal Solid Waste (Management and Handling) Rule, 2016. Waste from biodegradable bins will be reutilized in bio-composting to prepare organic manure. Non bio-degradable waste will be disposed off through govt. waste collection system.

Organic Waste Converter (OWC) or 2 Nos. bio composting pits of 500 Kg. capacity (Dimension: L- 3.5 m. x W-1.5 m., D – 1 m.) will be provided within premises for composting of biodegradable waste. Option of OWC will also be considered for composting of biodegradable waste.

Three-bin system will be adopted. Storage facilities will be created and established by taking into account quantities of waste generation in a given area and the population densities. Different coloured bins for different categories of wastes will be provided.

Three colour of wheeled bins in each building: - Dark grey for non-recyclable waste, Green for kitchen food/ compostable garden waste and Blue for paper.

In addition, boxes will be provided for the collection of other recyclable materials; a green box is used for paper and a black box is used for cans and plastic collections.

Following measures will be adopted for safe disposal and management of solid wastes from the proposed project ;

- a. Waste from biodegradable bins will be reutilized in bio-composting to prepare organic manure.
- b. The dried STP Sludge will be used as manure for gardening
- c. Waste oil generated from DG Set / Other machinery overhauling and waste transformer oil will be sold off to CPCB / BSPCB authorized vendors for waste oil.
- d. Old newspapers & other paper waste and used empty bottles will be sold off to authorized scrap dealers.
- e. All the non bio-degradable waste disposal will be done through Purnea Municipal Corporation waste collection system or other authorized vendors.

The used Spent Oil from DG sets would be carefully stored in HDPE drums in isolated covered facility and disposed off through CPCB/BSPCB authorized recyclers as per guidelines of Hazardous and Other Wastes (Management and Transboundary Movement) Rules '2016.

Biodegradable wastes viz. kitchen waste, waste leaves etc. will be composted within project premises through Bio composting pits OR Organic Waste Converter of 500 Kg. Capacity.

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Director

9. ENERGY CONSERVATION

9.1 Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?

Power requirement: 1800 kW through BSEB Grid

Source of Supply: NBPDCCL

Back-up Source: 2 Nos. of DG Set of 750 KVA will be installed.

Energy Consumption per Sq. Ft. Built-up Area: 5.61 Watt/Sq. Ft.

Measures for minimizing energy consumption;

- Outer walls will be properly insulated to reduce heat load
- Provisions for using Solar power for landscape, corridors & pathways lighting.
- Capacitors system to improve the load power factor
- LED lamp fitting will be used.
- Roof Top Thermal Insulation will be provided
- Buildings will be designed to more daylight integration.
- 2.5 % power of total power requirement i.e. 49 kW of power for common lighting purpose will be sourced through solar panels on the roof.

The electrical installations are designed to comply with the regulations and practices and under stipulation of Pollution Control Authorities. They are based on the recommendation of the Indian National electrical code & Electrical Installation Standards.

9.2 What type of, and capacity of, power back-up to you plan to provide?

2 Nos. of DG Set of 750 KVA will be installed to meet emergency power load. Solar panels will also be provided to meet the emergency lighting purposes.

9.3 What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

In the proposed Building project clear & tinted glass will be used having U-Value of 2.9 W/m²K.

9.4 What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.

Passive solar design refers to use of the sun's energy for the heating and cooling purposes. Pergolas, projections, façade elements, metal louvers will be provided for sun shading to reduce the heat influx into the building and thus reduce the air conditioning loads.

Moreover, Solar energy will be used for meeting the requirement of hot water & landscape and street lighting purposes within the proposed building premises.

9.5 Does the layout of streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details.

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Proposed Buildings are designed in a way so that direct radiations can be received during day hours which are specific to the orientation. Solar energy will be utilized to meet various energy requirements.

Street lights, Green Belt & Landscape lights will be solar powered. The on/off control of external lighting will be through automatic time based timers.

Provisions have been made for Solar street lights, Solar blinkers, Solar power packs/inverters, Roof top SPV (Solar Photo voltaic) systems.

9.6 Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?

Shadings provided to reduce cooling loads. Green area and open areas will be spaced in a way to achieve reduction in temperature.

9.7 Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications.

The space heating load will be minimized by using passive solar structures and suitable building envelope material. LED will be used in all common areas. The façade lighting and external lighting shall be controlled by timer clock. There will be on/off control of external lighting through automated timer-based systems.

- The glass area to be covered with curtain / Venetian blinds / sun film
- The roof has been considered as insulated with 50 mm thick insulation, also under deck insulation of the roof is suggested.
- The main entrances shall have air Curtains.

The system design for all material equipment shall in general comply with the standards, codes and statutory regulations issued by the relevant authorities.

Integrated building management system (IBMS) will enable automation and effective operation of building and facilities. The IBMS can integrate energy management system, Electrical distribution system, lifts, CCTV system, fire alarm system and others.

The system design for all material equipment shall in general comply with the standards, codes and statutory regulations issued by the relevant authorities.

9.8 What are the likely effects of the building activity in altering the micro-climates? Provide a self assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?

The proposed project is Residential Building Project due to which there will be insignificant emission of air pollutants by vehicular movements and occasional use of DG sets, therefore no heat island effect is envisaged, as the area is similar to proposed structures. Increased traffic generation and occasional use of DG sets used due to project is not going to cause significant increase in atmospheric concentration of gases and will not result in heat island formation and inversion effects. Grass pavers may be provided to avoid heat island effects.

9.9 What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R values of the individual components.

The structural design of proposed Residential Building Project will reduce heating loads as major part is of brick wall with plaster and paint finish. The U-factors & R values of the individual components are as under;

- Roof Assembly – R Value: 2.1 sqm. °C/W; U-factor: 0.409 W/sqm. °C
- Opaque Walls Assembly – R Value: 2.35 sqm. °C/W; U-factor: 0.352 W/sqm. °C
- Vertical Fenestration: U-factor: 3.177 W/sqm. °C; SHGC: 0.25

9.10 What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.

In the proposed Residential Project following considerations have been taken for Fire Fighting arrangements;

- i. Hydrant & Sprinkler system will be common
- ii. Sprinkler system will fed from the Hydrant riser and being the residential complex, sprinkler system will be restricted only in the basement and parking areas.
- iii. Single Jockey pump will be used to maintain the pressure on hydrant system.
- iv. Electrically operated hydrant pump to be used under the DG Supply only and not under the grid supply.
- v. Electrical load for jockey pump only to be considered under the grid supply.
- vi. Another diesel operated pump of same capacity to be kept as stand by.

Recommendation by the State Fire Office will be followed during the operational phase of the project.

The following provisions will be made for combating fire hazards;

- a. Underground Fire Water Tank & Pump Room
- b. Hydrant System & Wet Riser Piping
- c. Automatic Smoke Detectors
- d. Automatic Sprinkler System
- e. Fire Alarm System
- f. Portable CO₂ Fire Extinguishers.

Moreover, Emergency Evacuation Plan will be displayed at all strategic locations within the proposed Residential Building Premises.

9.11 If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics.

The proposed project is a Residential Building Complex and no glass will be used as wall materials within the proposed building premises.

9.12 What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.

In the proposed Residential Building Project premises prime importance is given to the natural wind circulation and illumination aspect. Keeping that in mind open terraces, cutouts, larger open able windows and the inter-block spaces have been proposed so that air infiltration through all the spaces is maximum.

9.13 To what extent the non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.

In order to conserve electrical energy, it is proposed to utilize solar energy for staircase lightings. The landing and mid-landing of all the staircases shall be provided with 12 hours back-up solar power lighting. All light fittings shall be provided with electronic ballast. Solar Power will be utilized for;

- Street lights
- Solar power packs/inverters
- Green Belt & landscape lighting

10.0 ENVIRONMENT MANAGEMENT PLAN :-

The Environment Management Plan would consist of all mitigation measures for each item wise activity to be undertaken during the construction, operation and the entire life cycle to minimize adverse environmental impacts as a result of the activities of the project. It would also delineate the environmental monitoring plan for compliance of various environmental regulations. It will state the steps to be taken in case of emergency such as accidents at the site including fire.

10.1 Proposed Environmental Mitigation Measures

These measures together constitute part of Environmental Management Plan (EMP). The environmental mitigation measures for construction and operation phases have been given in the following **Table**.

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 to 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.
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. • 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 disposed off through municipal waste disposal system and through piggeries. • 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
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.

10.2 GREEN BELT DEVELOPMENT AND LANDSCAPING :-

An area of 2189 Sqm. area (19.9 % of total land area) on ground will be developed and maintained for green belt within the project premises.

After construction of the Residential buildings, trees will be grown to the maximum extent all around the premises boundary.

As per the requirement of EIA Notification 2006 amendment vide Gazette Notification No. S.O. 3999(E) dt: 09.12.2016, one tree / 80 Sq. M. should be planted in case of building & construction projects, approx. 138 nos. of trees will be planted within and all around the proposed project premises.

While carrying out plantation within premises or outside the following considerations will be given for choice of types of trees :

- Species of trees and plants suitable for the local agro-climatic and soil conditions will be selected.
- Natural hedgerows will be preferred over fencing wherever possible.
- Trees with large canopies will be chosen which will serve as natural air filters, noise attenuators and umbrellas.


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 Director

- Automatic irrigation systems will be installed. Irrigation will preferably be carried out at night so that less water is lost in evaporation and most of the water naturally percolates to groundwater through the soil.
- Location of trees and shrubs will be chosen such that they provide a natural shield to the buildings from natural ailments like excessive sunlight and rain.
- Organic manure made from garden waste (dry leaves etc.) & STP sludge will be used so that dependence on chemical fertilizer can be reduced.

Following species will be planted within the premises of proposed project :

• Crotons
• Coleus
• Colocasia
• English Laurel
• Song of India
• Roses
• Jasmine
• Chrysanthemum
• Gerbera
• Marigold
• Geranium
• Dahlia
• Daffodils
• Tulips
• Bird's Nest Fern
• Bougainvillea
• Arabian Jasmine
• Orchid Tree
• Bottle Brush
• Jungle Flame or West Indian Jasmine

10.8 ENVIRONMENT CONSERVATION CONSIDERATIONS ;

Following initiatives may be considered (if feasible within economic constraints) for energy conservation & preserving the environment ;

- Switching to low-flow toilets or installing toilet tank fill diverters.
- Installation of low-flow showerheads and sink aerators.
- Switching to compact fluorescent light bulbs in lobbies and common areas and use of sensors and/or timers for areas that are infrequently used.
- Awareness program for to close drapes and turn off lights and turn off heating / air conditioning when rooms are unoccupied.
- Installation of window film to lower heating and cooling loads

- Provision of recycler baskets for newspaper, white paper glass, aluminum, cardboard and plastic.
- Provision of recycling bins to make recycling as easy as possible.
- Use of least toxic cleaners, sanitizers, paints, pesticides etc. throughout and ensuring all chemicals are stored safely in a well-ventilated area.
- Monitoring and tracking rates of energy and water use. Making repairs or replace equipment when rate changes indicate problems.
- Creating an incentive program to encourage management staff to participate in and improve upon environmentally friendly practices.

10.9 ENVIRONMENTAL MONITORING PROGRAM ;

Monitoring / Sampling stations will be fixed as per recommendation of Environmental Clearance to assess the ambient levels in relevant areas of environment after the commissioning of the project. An environmental monitoring program is important as it provides useful information on the following aspect:

- It helps to verify the predictions on environmental impacts presented in this study.
- It helps to indicate warnings of the development of any alarming environmental situations, and thus, provides opportunities for adopting appropriate control measures.

The monitoring program in different areas of environment are outlined below;

POST PROJECT ENVIRONMENTAL MONITORING PROGRAM

Area of Monitoring	Frequency of sampling	Parameters to be Analyzed
Ambient Air Quality	Quarterly	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ & O ₃
DG Set Stack Emission	Quarterly	PM, SO ₂ & NO ₂
Ground Water Quality	Monthly	As per IS 10500:2012
Effluent sample before & after STP	Monthly	In accordance with EPA, 1986 and requirement of Central Pollution Control Board (CPCB)
Noise	Quarterly i.e. once in three months	Ambient Equivalent continuous Sound Pressure Levels (Leq) at Day and Night Time

10.10 ENVIRONMENTAL BUDGET FOR STATUTORY COMPLIANCES;

Sr. No.	EHS Component	One Time Installation Cost	Recurring Cost / Annum
1.	Installation of STP & Water Treatment Plant	Rs. 25 Lakhs	Rs. 5 Lakhs
2.	Installation of SPV and Solar Lighting System	Rs. 10 lakhs	Rs. 2.5 Lakhs
3.	Installation of Fire Fighting &	Rs. 25 Lakhs	Rs. 5 Lakhs

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	Management System		
4.	Environmental Monitoring as per requirement of EC	----	Rs. 5 Lakhs
5.	Green Belt Development & Maintenance	Rs. 15 Lakhs	Rs. 5 Lakhs
6.	Rain Water Recharging (2 Nos.)	Rs. 2 Lakhs	Rs. 0.5 Lakhs
7.	Biocomposting Pits & OWC	Rs. 5 Lakhs	Rs. 1.5 Lakhs
TOTAL AMOUNT		Rs. 82 Lakhs	Rs. 24.5 Lakhs

After the completion of Construction work of proposed Residential Building project of M/s Simanchal Infrastructure Pvt. Ltd. will carry out environmental monitoring & management work as per conditions imposed in Environmental Clearance issued by State Expert Appraisal Committee, Bihar. A fixed amount as per above budget will be allocated for Environmental Monitoring & Management work of proposed Panorama Mangalam Project.

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 Director

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Director