
CONCEPTUAL PLAN

FOR

“S.L.C. MEDICAL COLLEGE AND S.P.N.M.S HOSPITAL”

At

Parmandpur, Block : Khagaria
District, Khagaria ; State : Bihar


अध्यक्ष
माधुरी सेवा न्यास

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1.0 INTRODUCTION

The state of Bihar is at the crossroads of an exciting and challenging period in its history. As multiple growth and development avenues emerge, the state is embarking on a vibrant journey to realise dreams of a better future. In order to achieve this goal, Govt. of Bihar focused on making quality healthcare affordable and accessible to all.

With a population of 104 million, Bihar is the second most populous state in India, next only to Uttar Pradesh. Nearly 90% of the state's population lives in rural area, compared to 72% for the country as a whole. Being the least urbanized state, Bihar's pace of development especially in healthcare sector is very low.

Recognizing the need to progressively address the huge challenges Bihar faces in achieving sustainable healthcare reforms and accelerating human development, health has been given priority attention by the Govt. of Bihar. Specific activities have been undertaken to improve the basic indicators of health. These include improvements in infrastructure and delivery system of health care, provision of manpower, equipments and drugs, improved inter-sectoral coordination, monitoring and evaluation, health education & other innovative approaches.

However, an analysis of the current health profile of Bihar indicates the gaps and deficiencies in terms of healthcare service outreach, available resources, healthcare infrastructure and affordability, when compared to some of the other Indian states. The strategies and interventions outlined would focus on key areas affecting the important indicators of health hoping that success of these initiatives would have far reaching implications towards better health of common people across the State. The focus of the outcomes and the associated key processes for the achievement of these outcomes, would be at improving the health status in Bihar at a faster pace.

Major Goals for Healthcare Initiatives of Govt. of Bihar ;

- i. Improve the healthcare infrastructure by increasing the number of beds per thousand population by 3 times in the next 5 years.
- ii. Increase the number of doctors graduating per year progressively through increase in the number of medical colleges by 4 times in the next 6 years.

As per data of Department of Health & Family Welfare (Govt. of Bihar), currently there is a need for 6000 doctors across the state of Bihar, while only 700 doctors are graduating every year from the 6 Govt. and 3 Private Medical Colleges.

The government is in the process of setting up three new medical colleges in Nalanda, Bettiah and Madhepura with a total seat capacity of 300, which is still not sufficient to bridge the supply-demand gap. Private players are also being encouraged by Govt. of Bihar for providing health care facility and medical education for local population.

In view of the above concept, Madhuri Seva Nyas embarked upon establishing a 400 Seat Medical College with 400 bedded hospital, at Parmanandpur, Block Khagaria, Dist. Khagaria. Bihar.

2.0 PROJECT BACKGROUND ;

- Madhuri Seva Nyas (Public Charitable Trust) is operating a Nursing College (150 seats) and Hospital Project (150 beds) at Parmanandpur, Dist. Khagaria. Existing built-up area of project is 18133.34 Sqm. In order to improve the health care facility and medical education in the region Madhuri Seva Nyas proposed for establishment of **S.L.C. MEDICAL COLLEGE AND S.P.N.M.S HOSPITAL** within existing land area of trust.

Total cost of the project is Rs. 85 Crores.

The main purpose and benefit of the project are as under:

- To provide quality education in the field of medical sciences and health care.
- To provide quality and cost effective health care facilities for locals of the region.
- To create an environment that could support good standard and essential facilities required for day to day activities.
- To enhance the surroundings with greenery, landscaping and recommended aesthetics.
- To emphasize the policy of rain water harvesting to create a better micro climate in the area
- To create a healthy planned environment.

3.0 PROJECT LOCATION & SURROUNDINGS;

The project site is located at Mauza : Parmanandpur, Khata No. 74, 43, 43, 43, 64, 74, 1, 31, 31 Khesra No. 191, 195, 217, 217, 217, 191, 195, 185, 186, 186 Thana No. 271.

Connectivity: Proposed project is located near NH-31 road connecting project site to District Headquarter at Khagaria and all other place of Bihar state and rest of country. Project site is located at 3 Km. away from Khagaria Railway Station on Barauni-Katihar Sec. of ECR. Nearest airport is Patna Jay Prakash Narayan Airport Approx 150 km from the Project Site.

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

Location	Latitude	Longitude
Main Block		
NE	25°30'15.57"N	86°29'43.51"E
NW	25°30'17.88"N	86°29'31.47"E
SE	25°30'8.65"N	86°29'40.03"E
SW	25°30'8.92"N	86°29'36.07"E
Hostel & Lawn Block		
NE	25°30'15.28"N	86°29'46.45"E
NW	25°30'15.54"N	86°29'43.82"E
SE	25°30'13.49"N	86°29'46.39"E
SW	25°30'13.34"N	86°29'43.46"E

The various feature in the vicinity of the Project area are as follows:

East	Vacant Land (Budhi Gandak River)
West	Vacant Land , Khagaria Town
North	NH 31, Railway Line, Khagaria Town
South	Vacant Land (Budhi Gandak River)

4.0 PROJECT DETAILS & FACILITIES ;

Total land of the project area is 54875.37 Sqm. (5.4875 Ha.). The detailed area statement is given in table..

EXISTING BUILDING AREA STATEMENT					
S. No.	Particulars	Ground Floor B/Area (Sqft.) (A)	Floor (B)	Total Built up Area (Sqft.) (A x B)	Total Built up Area (SqM.)
01	Hospital (A)	16920	G+3	50760.00	4715.75

02	Academic Block	15240.50	G+5	76202.50	7079.44
03	Boys Hostel	8606.24	G+4	34424.96	3198.18
04	Girls Hostel	8449.59	G+4	33798.36	3139.97
	TOTAL B/A			195185.82	18133.34
PROPOSED BUILDING B/ AREA PHASE-01					
05	Hospital (A)	16920.0	4 Th & 5 Th	33840.0	3143.83
06	Hospital (B)	12300.0	G+4	61500.0	5713.53
07	Examination Hall	4050.0	G+1	4050.0	752.51
08	Teacher Residence	10518.78	G+4	52593.9	4886.13
09	Boys Hostel	8450.0	G+4	42250.0	3925.15
10	Staff Quarter	3599.0	G+4	17995.0	1671.79
11	Admin. Block	16920.0	Ground	16920.00	1571.91
	TOTAL B/A			233198.9	21664.85
PROPOSED BUILDING B/ AREA PHASE-02					
12	Hospital (C)	16920.0	G+4	84600.00	7859.59
13	Admin. Block	16920.0	1 St & 4 th	67680.0	6287.67
14	Examination Hall	4050.0	2 Nd & 4 Th	4050.0	1128.77
15	Teachers Residence	10518.78	G+4	52593.9	4886.13
16	Staff Quarter	3599.0	G+4	53985.0	5015.37
17	Girls Hostel	8450.0	G+4	42250.0	3925.15
	TOTAL B/A			313258.9	29102.68
	Existing & proposed building TOTAL B/area			741643.62	68900.87
	Site (land) area			590673.60	54875.37
	Parking area			35029.18	3254.31
	Soft Landscape Area			158228.23	14699.88
	Play Area			75962.30	7057.30
	Pond Area			47366.85	4400.52
	F.A.R			1.29	

- Water Consumption: **547 KL/Day through Local body/Govt. supply or Borewells / STP treated Water (fresh water 423 KL/D and 124 KL/D Treated water)**
- Power requirement: **1800 KW through State Govt. Grid. (NBPDC)**
- **Connectivity:** Proposed project is located near NH-31 road connecting project site to District Headquarter at Khagaria and all other place of Bihar state and rest of country. Project site is located at 3 Km. away from Khagaria Railway Station on Barauni-Katihar Sec. of ECR. Nearest airport is Patna Jay Prakash Narayan Airport Approx 150 km from the Project Site.
- Community facilities: **All community facilities like schools, market, educational institutions, banks, etc. are located within 5 Km. radius of Project area.**
- **Parking needs:** Parking facility will be provided within project premises for 200 nos. of ECS and Ambulances in 3254 Sqm. open area.

5.0 PROJECT COMPONENTS ;

The infrastructure facilities planned for the proposed *Medical & Allied Sciences Campus Building Project* are highlighted under this part. All the plans for the proposed project have been prepared according to the Building Bye Laws of Bihar. Proposed project will have Medical/Nursing College, Hospital and Faculty Quarters (Residential) Areas for students and staffs.

The proposed project is designed in such a way that natural light and air circulation would enhance the micro-environment of the project area. Adequate natural light and air ventilation will be available in the premises during daytime. It will be helpful in energy conservation significantly. The proposed project will provide space in accordance with the planning parameters of the Modified Building Bye-laws, Bihar. Modern amenities, which include adequate power backup, 24X7 security with intercom facility, drinking water & waste water treatment also being proposed in the Project.

5.1 Community Facility

The proposed development will include all basic essential facilities as per the prevailing norms in the area. It would also include construction of internal developments like roads, water supply, drains, sewers, electrification, rain water harvesting structure, parking, other utilities and landscape areas.

5.2 Power Requirement & Availability

The estimated power and Backup power for the proposed Project is about 1800 KW, based up on average power requirement of 2.42 Watts per sq. ft. of Built-up Area for the project, considering the specified power distribution and load factors. Although the power supply to the project would be from NBPDCCL but in case of any power failure, the power back-up system is also being proposed. This power Back up would be provided by 2 DG sets of 1600 Kw capacity. The height of all sources of emissions will be provided as per the prevailing specifications of the MoEF, Govt. of India. Waste oil, if any, will be stored as per the specifications and sold to authorize agencies only as per requirement of Hazardous and Other Wastes (Management and Transboundary Movement) Rules '2016.

5.3 Water Requirement & Availability

S.No.	Category	Population	Per Capita Requirement in Ltrs. As per NBC 2016	Nett. Water Requirement in Ltrs.	Nett. Water Requirement in KLD
1. Fresh Ground Water Requirement					
A.	Patient (450 beds Proposed)	450	450	202500	203
B.	Patient (150 beds Existing)	150	450	67500	68
C.	OPD Visitors	1000	15	15000	15
D.	Mortuary Ward	15	15	225	0.23
E.	Kitchen & Pantry	100	70	7000	7
G.	Medical College	450	45	20250	20
H.	Nursing College	150	45	6750	7
I.	Boy's hostel	250	135	33750	34
J.	Girl's hostel	200	135	27000	27
K.	Nursing Hostel	150	135	20250	20
L.	Faculty/Staff quarters	125	135	16875	17
M.	Office Staffs etc. & Others	100	45	4500	5
Total Water Requirement				428350	423.23 OR 423 KLD
2.	Greenbelt and Landscape Area/ Development (STP Treated Water)	20187 Sq.m	@ 1 Ltr./Sqm.	20187	20
3.	HVAC Cooling (STP Treated Water)	-----	100 Ltr./ hr (24)	2400	2.4
4.	D.G. Sets Cooling (STP Treated Water)	1600 Kw	1 Ltr./Kw/hr.	1600	1.6
5.	Fire Fighting				100
Grand Total (1+2+3+4+5)				547 KLD	

5.4 Parking Requirement & Availability

Parking facility will be provided within project premises for 200 nos. of ECS and Ambulances in 3254 Sqm. open area.

5.5 Manpower Requirement & Availability

Approx. 100 skilled, unskilled and professional work forces as on temporary basis will be required during the construction period. Temporary proper sanitary facilities will be provided to Construction laborers in form of mobile toilets. Wash areas will be constructed

and good hygienic conditions will be maintained. Hence, no adverse impacts on human health are envisaged due to construction activities of proposed Hospital Building Project.

6.0 ENVIRONMENTAL 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.

6.1 WATER POLLUTION MANAGEMENT;

6.1.1 Construction Phase ;

Water requirement during construction phase is expected to be about 10 m³/day, which will be primarily sourced through govt. water supply or Water Tankers. The following control measures will be adopted in order to minimize the construction impacts on water quality of the area :

- Monsoon season would be avoided for construction activity.
- 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 will be reused for wetting of building materials & structures.

6.1.2 Operation Phase ;

The total water requirement for the proposed Medical/Nursing College & Hospital etc project will be approx. 547 KL/day. Fresh water requirement will be approx. 423 KL/Day and balance 124 KL/Day water will be treated water from STP. Fire fighting, irrigation & DG Cooling water requirement will be met by Treated Water from STP. The fresh water will be sourced through bore wells at project site.

Waste Water Treatment:

359 KLD domestic effluent will be generated from the proposed Medical College & Hospital Campus premises. All these effluents will be sent to 400 KLD capacity STP inside premises for treatment. The process of treatment is as under;

A 400 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, Fire fighting, make-up water in cooling towers and for landscape irrigation Treated water Characteristics will be as under;

Parameters	General Standards as per Schedule VI of E(P) Rules for Irrigation of Land	Expected Conc ⁿ . (mg/l.)
1. pH	5.5 – 9.0	6.5 – 7.5
2. Suspended Solids mg/l.,	200.0 mg/l.	< 20.0
3. BOD (3 days at 27 ⁰ C), mg/l.	100.0 mg/l.	< 10.0
4. COD, mg/l.	Not Specified	< 30.0
5. Oil & Grease, mg/l.	10.0 mg/l.	< 2.0

6.1.3 Rainwater Harvesting;

Annual Rainwater harvesting potential of the proposed project will be approx. 15835 m³. All of this water is expected to percolate down to the groundwater table thus acting as a recharge system. The natural purification process (filtration and adsorption phenomena while percolation through soil) is expected to further enhance the water quality by the time the water reaches the groundwater table.

Each buildings have garland drain along with plinth protection. Discharge of Rain Water from terrace will be in garland drains through rain water pipes. The garland drain will be connected to storm water drain.

Type of Area	Area in m ²	Run-off Coefficient	Annual Avg Rainfall in m	RWH Potential(m ³)
Roof Area	19206	0.85	0.97	15835
6 Nos. recharge pits will be provided in the premises				

6.4 AIR QUALITY MANAGEMENT;

6.4.1 Construction Phase;

During construction period major sources of dust & smoke are DG Sets, 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.

6.4.2 *Operational Phase* ;

The sources of air emissions from the proposed project are the stacks attached to DG set Exhaust. The DG sets will run only in case of power failure and hence air emissions from the DG sets are restricted to only such occasions.

The impact of Air Emissions can be minimized in following ways ;

- Stack height, of 3.5 m. above the roof of the building where DG Sets will be installed, as per regulatory norms will be provided for the DG sets to ensure satisfactory dispersion of the gaseous pollutants.
- It will be ensured that the stack emissions from DG sets meet prescribed standards for diesel engines as per GSR 489 (E), July 11, 2002.
- The DG Sets will be maintained regularly as per preventive maintenance schedules and engine tuning of DG Sets carried out as per recommendations by the manufacturers to ensure stack emission quality within desired limits.
- The secondary source of air emissions is from vehicles movement of the residents & outside guests. It shall be ensured that all such vehicles are maintained on regular basis and meet PUC norms.
- Moreover, 20187 Sq.m. Green Belt will be developed & maintained within the proposed Building Project Premises.

6.5 AMBIENT NOISE MANAGEMENT;

6.5.1 *Construction Phase* ;

- Equipment generating minimum noise and vibration will be selected for construction phase
- Vehicles and construction equipment with internal combustion engines will be provided with proper silencers and mufflers in order to reduce noise levels.
- Requisite compliance requirements from contractors for their equipment will be communicated to them before commencing construction.
- To prevent the hearing damage to construction workers, they will be provided with ear plugs and muffs and job rotation will also be practiced.
- Emphasis on carrying out the construction work during day time only.

6.5.2 Operational Phase ;

- During the operational phase, noise will be generated from the DG sets, compressors, pump rooms & vehicles movement.
- The DG set room, compressors and pump room will be isolated from the outside environment and proper acoustic arrangements will be made to control the noise generated.
- The noise levels outside these rooms will be maintained within the stipulated norms both during the day and night time
- It shall be ensured that the new DG sets to be installed for the proposed hotel shall comply with all applicable environmental regulations for noise. The DG set shall have an acoustic enclosure and an exhaust muffler that will ensure minimum of 25 dB(A) insertion loss.
- Plantation and landscaping will be designed to ensure that there is a green belt all around the project area so that further noise attenuation is achieved.
- Overall design of facilities, equipment, layout and landscaping is done with a view to maintain pre-project noise level in the post project stage also.
- All efforts will be made to maintain the noise level within the proposed premises around 50 dB(A) in day time & 40 dB(A) during night time.
- Moreover, 20187 Sq.m. Green Belt will be developed & maintained within the proposed Project Premises. Alongside boundary of the proposed building premises trees will be planted which will also act as barrier for outside noise.

6.6 SOLID & HAZARDOUS WASTE MANAGEMENT ;

6.6.1 Construction Phase ;

No flammable / hazardous materials will be handled, stored or used beyond the Threshold Limit of MSIHC Rules at Construction site of proposed Project.

- Wherever possible, hazardous raw materials will be substituted by non-hazardous materials e.g. cleaning solvents can be replaced with biodegradable cleaners, usage of non-chlorinated strippers instead of strippers containing methylene chloride and substitution of water based paints for oil based ones.
- On-site recycling of all waste solvents / thinners and oils and off-site recycling of paint, thinner, solvent wastes and waste oil will be carried out. Segregation and storage of waste paints and thinners, contaminated rags and brushes will be carried out to facilitate recycling and reuse.

- Vehicle maintenance area shall be designed to prevent contamination of ground water by accidental spillage of oil.
- Appropriate inventory control of all hazardous materials will be maintained.
- It will be ensured that concerned contractors follow prescribed directions regarding the above.

6.6.2 Operational Phase ;

The collection, transportation and disposal of the solid waste generated during the operation phase of the proposed medical college & hospital project will be done as per Solid Wastes Management Rules, 2016 (SWM Rules).

During operational phase approx. 1224 Kg/D solid waste will be generated from proposed Medical College & Hospital building project in the form of Kitchen waste & other domestic waste. (@0.45 Kg per capita).

All the generated solid waste collection & disposal will be done through gram /local panchayat waste collection system or other authorized vendors. Recyclable items like, paper, glass, iron bits, timber products etc. will be sold to local vendors.

These generated solid wastes will be first segregated as plastic, glass, paper and other waste separately and disposed off as per SWM Rules, 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.

Adequate number of collection bins separate for biodegradable and non-biodegradable waste will be provided as per The Solid Waste Management Rules, 2016. Waste from such bin will be collected separately on daily basis.

3 Nos. Biocomposting pit of 360 kg capacity (Dimension L-3m x W- 2m x D-1m) will be provided with in premises 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: dark grey for non-recyclable waste, green for kitchen food/compostable garden waste and blue for paper. In addition, boxes must 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.

All the generated municipal solid waste collection & disposal will be done through Local Panchayat.

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

- a. Waste oil generated from DG Set / Other machinery overhauling and waste transformer oil will be sold off to CPCB / BSPCB authorised vendors for waste oil.
- b. Old newspapers & other paper waste and used empty bottles will be sold off to a scrap dealer.

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.

BIO-MEDICAL WASTE MANAGEMENT;

Approx. 0.6 T/day (@ 1 Kg/Day/Bed) of Bio Medical Waste will be generated from the proposed Medical & Allied Sciences Campus project (medical/nursing college & hospital etc) premises which will be handled as per guidelines of The Bio Medical Waste Management Rules 2016. Generated Bio Medical Waste will be disposed off through CBMWTF at Bairiya Sangam /IGIMS, Patna.

6.7 GREEN BELT DEVELOPMENT AND LANDSCAPING :-

An area of 20187 Sq. M. (14699.88 Sqm. Soft Land Scape and 5487.12 Sqm. (10% of total land)for Green Belt) has been allocated within the proposed Medical College & Hospital Campus project (medical/nursing college & hospital etc) for green belt & landscaping development.

After construction of the proposed 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. 700 nos. of trees will be planted within and all around the proposed medical college and hospital building 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.
- 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.

Botanical Name	Common Name
<i>Butea monosperma</i>	Flame of the Forest OR Palas
<i>Ficus Benjamina</i>	Weeping Fig
<i>F.Benghalensis</i>	Banyan
<i>Madhuca Indica</i>	Jatropha
<i>Pongamia glabra</i>	Karanj
<i>Terminalia Arjuna</i>	Arjun
<i>Albizia lebbek</i>	Siris
<i>Bombax ceiba</i>	Silk Cotton Tree OR Semal
<i>Tectona grandis</i>	Sagwan or Teak
<i>Liriodendron tulipifera</i>	Poplar
<i>Azadirachta Indica</i>	Neem

<i>Mangifer Indica</i>	Mango
<i>Juniperus chinensis</i>	Chinese Juniper
<i>Kigelia pinnata</i>	Balam Kheera
<i>Polyalthia pendula</i>	Ashok
<i>Delonix regia</i>	Gulmohar
<i>Dalbargia sisoo</i>	Sheesham
<i>Embllica officinalis</i>	Amla

Following ornamental species will be planted within the premises of proposed Building 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

6.8 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 residents of the buildings 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, aluminium, 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.

6.9 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 programme is important as it provides useful information on the following aspect:

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

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

POST PROJECT ENVIRONMENTAL MONITORING PROGRAM

<i>Area of Monitoring</i>	<i>Frequency of sampling</i>	<i>Parameters to be Analyzed</i>
Ambient Air Quality	Monthly	PM ₁₀ , PM _{2.5} , SO ₂ , NO ₂ & CO
Monitoring of DG Set Stack Emission	Monthly	PM, SO ₂ & NO ₂
Ground Water Quality	Monthly	As per IS 10500:2012
Effluent sample before & after STP	Monthly	In accordance with Schedule VI of E (P) Rules, 1986 and requirement of Central Pollution Control Board (CPCB)
Noise	Monthly	Ambient Equivalent continuous Sound Pressure Levels (Leq) at Day and Night Time

6.10 ENVIRONMENTAL BUDGET ;

EHS Component	One Time Installation Cost	Recurring Cost / Annum
1. Installation of 400 KLD STP	Rs 50.0 Lakhs	Rs 15.0 Lakhs
2. Solar Lighting System	Rs. 25.0 Lakhs	Rs. 7.0 Lakhs
3. Installation of Fire Fighting & Management System	Rs. 25.0 Lakhs	Rs 7.0 Lakhs
4. Maintenance of Drains and Hygiene Management	---	Rs. 15.0 Lakhs
5. Environmental Monitoring as per requirement of EC	---	Rs. 7.5 Lakhs
6. Green Belt Development & Maintenance	Rs. 25.0 Lakhs	Rs. 10.0 Lakhs
TOTAL AMOUNT	Rs. 125 Lakhs	Rs. 61.5 Lakhs

7.0 DISASTER & EMERGENCY MANAGEMENT PLAN

Emergency prevention through good design, operation, maintenance and inspection are essential to reduce the probability of occurrence and consequential effect of such eventualities. However, it is not possible to totally eliminate such eventualities and random

failures of equipment or human errors, omissions and unsafe acts cannot be ruled out. An essential part of major hazard control has therefore, to be concerned with mitigating the effects of such Emergency and restoration of normalcy at the earliest.

The overall objective of an Emergency Response Plan (ERP) is to make use of the combined resources at the site and outside services to achieve the following:

1. To localize the emergency and if possible eliminate it;
2. To minimize the effects of the accident on people and property;
3. Effect the rescue and medical treatment of casualties;
4. Safeguard other people;
5. Evacuate people to safe areas;
6. Informing and collaborating with statutory authorities;
7. Initially contain and ultimately bring the incident under control;
8. Preserve relevant records and equipment for the subsequent enquiry into the cause and circumstances of the emergency;
9. Investigating and taking steps to prevent reoccurrence

The ERP has therefore to be related to the identification of sources from which hazards can arise and the maximum credible loss scenario that can take place in the concerned area. The plan takes into account the maximum credible loss scenario-actions that can successfully mitigate the effects of losses/emergency need to be well planned so as they would require less effort and resources to control and terminate emergencies, should the same occur.

7.1 RESPONSE IN CASE OF EARTHQUAKE

Response Procedures for Occupants

If indoor

1. Take shelter under heavy furniture or against an inside wall and hold on
2. Stay inside: the most dangerous thing to do during the shaking of an earthquake is to try to leave the building because objects can fall on you.

If outdoors

Move into open, away from building, streetlights and utility wires. Once in the open, stay there until the shaking stops.

After the quake

1. After the quake be prepared for aftershocks
2. Although smaller than the main shock, aftershocks cause additional damage and may bring weakened structures down. Aftershocks can occur in the first hours, days, weeks or even months after the quake.

Help injured or trapped persons:

1. Give first aid where appropriate. Do not move seriously injured persons unless they are in immediate danger of further injury. Call for help.
2. Remember to help those who may require special assistance-infants, the elderly and people with disabilities.
3. Stay out of damaged buildings.
4. Use the telephone only for emergency calls.

Response Procedure for Emergency Team

1. Formulate an Emergency Response Team for earthquake response.
2. Using the public address system, inform residents of response procedures discussed above.
3. Inform the necessary authorities for aid.
4. Ensure no residents are stuck beneath any debris, in case of a structural failure.
5. Ensure that all residents standing outside near the buildings are taken to open areas.
6. Ensure that the first aid ambulance and fire tender vehicles are summoned if necessary.
7. Inform the nearby hospitals if there are any injuries.
8. Check the utilities and storage tanks for any damage.

7.2 RESPONSE FOR LPG LEAKAGE

1. The affected area should be evacuated and cordoned off immediately.
2. Initiate an emergency response team for LPG leakage.
3. Ensure that only concerned personnel are present in the affected area and all other personal and visitors are moved to the nearest assembly points.
4. Rescue trapped personnel, also check if any personnel are unconscious in the area and immediately move them outside and provide first aid. Ambulance should be summoned to take injured personnel to the nearest hospital.

5. Personnel in the nearby buildings to close all doors and windows to prevent entry of the leaked gas.
6. Source of leakage to be traced and isolated from all the other areas. And if required use pedestal fans to bring down the gas concentration.
7. In case of a fire follow the instruction in case of fire.

7.3 RESPONSE IN CASE OF FIRE

1. Required response during in the event of a fire should be described in signs located in the lobby.
2. Inform the Fire department.
3. If the fire is small, engage in extinguishing the fire using the nearest fire extinguisher.
4. The emergency response team will provide immediate relief to the injured residents at the scene of incident. Any injured persons should be evacuated on priority to the dispensary or one of the nearest hospitals based on their conditions.

7.4 INSTRUCTIONS FOR THE OCCUPANTS-

1. Get out of buildings as quickly and as safely as possible.
2. Use the stairs to escape. When evacuating, stay low to the ground.
3. If possible, cover mouth with a cloth to avoid inhaling smoke and gases.
4. Close doors in each room after escaping to delay the spread of the fire.
5. If smoke is pouring in around the bottom of the door or if it feels hot, keep the door closed.
6. Open a window to escape or for fresh air while awaiting rescue.
7. If there is no smoke at the bottom or top and the door is not hot, then open the door slowly.
8. If there is too much smoke or fire in the hall, slam the door shut.
9. Stay out of damaged buildings.
10. Check that all wiring and utilities are safe.

8.0 FIRE FIGHTING FACILITIES;

In the proposed “Medical College & Hospital Campus” Project following considerations have been taken for Fire Fighting arrangements;

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- i. Hydrant & Sprinkler system will be common
 - ii. Sprinkler system will be fed from the Hydrant riser and being the institutional 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.
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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 premises of proposed “Medical College & Hospital Campus” Project.

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