Shri Mukandi Lal Memorial Foundation For Heart & Medical Care

NABH Accredited, NABH - Nursing, Emergency Excellence & Safe-I Certified Hospital

2, Institutional Area, Vikas Marg Extn. ,
Karkardooma, Delhi - 110092 I Tel. No. : +91 11 47276600

Dated: 24.07.2020

To,

Member Secretary (Infra-2),
Ministry of Environment, Forest & Climate Change,
Indira Paryavaran Bhavan,
Jorbagh Road, New Delhi -110003

Sub: Environment Clearance for the Expansion of Shanti Mukand Hospital at 2, Institutional Area, Vikas Marg Extension, Karkardooma, Delhi by Shri Mukandi Lal Memorial Foundation for Heart & Medical Care.

Ref: 53rd EAC (Infra-2), meeting dated 24.07.2020

Dear Sir,

This is in reference to the above mentioned subject; we are herewith submitting the reply to the observations raised during 53rd EAC (Infra-2) meeting dated 24.07.2020 for your kind perusal.

Hope this will meet your satisfaction.

Thanking you,

Yours sincerely,

For, Shri Mukandi Lal Memorial Foundation for Heart & Medical Care

Sunil Saggar

CEO

Reply to the observation raised during 53rd EAC (Infra-2), meeting Dated 24.07.2020 w.r.t. Expansion of Shanti Mukand Hospital at 2, Institutional Area, Vikas Marg Extension, Kakardooma, Delhi by Shri Mukandi Lal Memorial Foundation for Heart & Medical Care

S. No.	Observation	Reply
1.	**Revise Application (Form-2) as it did not provide details for trees to be cut. Further Provide details of tree cutting/transplantation proposed due to proposed expansion. Further, there are inconsistencies in submissions made to EAC and submissions in Conceptual Plan w.r.t. reuse of treated water from the ETP. EAC cautioned PP that data provided in the Application and other associated documents shall be consistent with the data present before EAC and asked to clarify their stand on this aspect.**	Revised Application (Form-2) is enclosed as **Annexure I.** Details of tree cutting/ transplantation proposed due to proposed expansion is enclosed as **Annexure II,** for kind perusal. The relevant changes with respect to the reuse of treated water from the ETP have been made in the Form 2 (please refer point No 16 of the Annexure -1). As suggested by the esteemed committee members, we have updated application and other associated documents, thereby removing inadvertent inconsistencies in the data, for further processing of the application. Updated application is enclosed as **Annexure VI.**
2.	**Elaborate the permissibility/structural safety of the proposed alteration through an institute of repute.**	The permissibility and structural stability of the proposed alteration has been reviewed and the existing structure & foundations are found to be safe for the proposed vertical expansion of the Block-B. The

		Alteration Permissibility and Structure Stability Certificate is enclosed as **Annexure III.**
3.	**Submit the plan for solid waste management and bio medical waste management.** **Also highlight location and space allocated for management of biomedical and solid waste management**	The plan for solid waste management and bio-medical waste management is enclosed herewith as **Annexure IV(a)**. Solid waste management (Area = 5.04 sqm) & Biomedical waste room (Area = 10.8 sqm) Site plan with location of space allocated for Biomedical and Solid waste management is enclosed as **Annexure IV(b).**
4.	**Submit revised Plan for Corporate Environment Responsibility (CER) as specified under Ministry's Office Memorandum vide F. No. 22-65/2017-IA.III dated 1st May, 2018.**	Revised plan for CER is enclosed as **Annexure V.**

Annexure I

Form-2

APPLICATION FOR PRIOR ENVIRONMENTAL CLEARANCE

1	**Details of Project**			
	a.	Name of the Project (s)	:	Expansion of Shanti Mukand Hospital
	b.	Name of the Company / Organisation	:	Shri Mukandilal Memorial Foundation for Heart & Medical Care
	c.	Registered Address	:	2, Institutional Area, Vikas Marg Extension, Karkarddoma, Delhi
	d.	Legal Status of the Company	:	Private
	e.	Joint Venture (Yes/No)	:	No
		If Yes,		
		(i) No. of JV Partners **(*Multiple Entries Allowed*)**	:	

Name of the JV Partner	Share of the JV Partner	Address of the JV Partner	Email Id of JV Partner	Mobile No. of JV Partner

2	**Address for the correspondence**			
	a	Name of the applicant	:	Mr. O.P. Gupta
	b	Designation (Owner / Partner / CEO)	:	Founder Member
	c.	Address		2, Institutional Area, Vikas Marg Extension, Karkarddoma, Delhi
	d	Pin code		110092
	e	e-mail		ceo@shantimukand.com
	f.	Telephone No.		011-47276600
	g.	Fax No.		

3	**Category of the Project/Activity as per Schedule of EIA Notification,2006**			
	a.	Project / Activity [1(a)(i) / 1(a)(ii) / 1(b) / 1(c) / 1(d) / 1 (e) / 2(a) / 2(b) / 3(a) / 3(b) / 4(a) /		8(a)

		4(b)(i)/ 4(b) (ii) / 4(c) / 4(d) / 4(e) / 4(f) / 5(a) / 5(b) / 5(c) / 5(d) / 5(e) / 5(f) / 5(g) / 5(h) / 5(i) / 5(j) / 6(a) / 6(b) / 7(a) / 7(b)/ 7 (c) / 7 (d) / 7 (da) / 7 (e) / 7 (f) / 7 (g) / 7 (h) / 7 (i) / 8 (a) / 8 (b)		
	b.	Category ($A/B_1/B_2$)	:	B
		If B_1 or B_2		
		Reason for application at Central Level / State level (in case of B_2 projects)	:	SEIAA/SEAC Delhi tenure is completed
		If Others		
	c.	Please Specify	:	
	d.	EAC concerned (for category A Projects only) (Coal Mining / Non-coal Mining / Thermal / River Valley & Hydro / Industry-I / Industry-II / Infrastructure-I / Infrastructure-II / Nuclear & Defence / CRZ	:	
	e.	New / Expansion /Modernization / One Time Capacity expansion (only for Coal Mining) / Expansion under Para 7(ii) / Modernization under Para 7(ii) / Change of Product Mix under Para 7(ii))	:	Expansion
4	**Location of the Project**			
	a.	Plot / Survey / Khasra No.	:	2, Institutional Area, Vikas Marg Extension
	b.	Village	:	Karkardooma
	c.	Tehsil	:	-
	d.	District	:	East Delhi
	e.	State	:	Delhi
	f.	Pin Code	:	110092
	g.	Bounded Latitudes (North)		
		From	:	28.646270° N
		To	:	28.645969° N
	h.	Bounded Longitudes(East)		

		From	:	77.301904° E
		To	:	77.302356° E
	i.	Survey of India Topo Sheet No.	:	H43x6
	j.	Upload Topo Sheet File (*Upload pdf only*)	:	Uploaded at MoEFCC Web
	k.	Maximum Elevation Above Means Sea Level (AMSL)	:	204 m
	l.	Upload (kml) File (*Upload kml only*)	:	Uploaded at MoEFCC Web
	m.	Distance of Nearest HFL from the project boundary within the study area	:	202 m
	n.	Seismic Zone (Zone: 1 / 2 / 3 / 4 / 5)	:	4
5	**Whether project is executed in multiple States (Yes / No)?**			No
	If Yes			
	a.	Number of States in which Project will be Executed (e.g. *1,2,3,4,5,6*)		1
	b.	Main State of the Project		Delhi
	c.	Other State (*Multiple Entries Allowed*) (If the project to be executed, does not belong to any state, then state category could be selected as 'Other')		

State	District	Tehsil	Village

6	**Details of Terms of Reference (ToR)**			
	a.	Whether ToR is mandatory for submitting application (Yes / No)?	:	No
		If Yes		
	b.	Date of issue of ToR / Standard ToR	:	
	c.	MoEF&CC / SEIAA File No.	:	
	d.	Upload ToR letter (PDF only)	:	
7	**Details of Public Consultation**			

	a.	Whether the Project Exempted from Public Hearing (Yes/No)?	:	Yes
	b.	Reason	:	As it is a Building & Construction Project falling under category 8(a), no public hearing would be required
	c.	Supporting Document (*upload pdf only*)	:	NA
	c.	Whether details of Public Hearing available (Yes/No)?	:	N/A
8	**Details of Project Configuration / Product (*Multiple Entries Allowed*)**			
	a.	Whether the project is New (Yes/No?)	:	Yes
		If yes,	:	
	b.	Project Configuration	:	

Plant / Equipment / Facility	Configuration	Remarks if any
Hospital Project	400 Beds after Expansion	

c.	Product	:	

Product / Activity (Capacity / Area)	Quantity	Unit	Mode of Transport / Transmission of Product
Built up Area	27,862.51	sqm	Others

- Unit:- (Tons per Annum(TPA), Mega Watt(MW), Hectares(ha), Kilo Litre per Day(KLD), Tons Crushed per Day(TCD), Cubic Meter per Day, Kilometers(Km), Million Liters per Day(MLD), Others)
- Mode of Transport/Transmission of Product (Road, Rail, Conveyor Belt, Pipe Conveyor, Arial Ropeway, combination of two or three modes, Others)

9	**If Expansion / Modernization / One Time Capacity expansion (only for Coal Mining) / Expansion under Clause 7(ii) / Modernization under Clause 7(ii) / Change of Product Mix under Clause 7(ii))) –** Not Applicable			
	a.	Details of environmental clearance granted earlier		Not Applicable

		(i)	Date of issue of environmental clearance	:	
		(ii)	MoEFCC / SEIAA File Number	:	
		(iii)	Upload EC Letter	:	
	b.	Details of certified report on compliance of earlier environmental clearance conditions			Not Applicable
		(i)	Details of Regional Officeof MoEFCC / Zonal Office of CPCB / SPCB / UTPCC from which certified reporton compliance of earlier environmental clearance conditions obtained	:	NA
		(ii)	Letter No	:	NA
		(iii)	Status of Compliance	:	NA
		(iv)	Certified reporton compliance of earlier environmental clearance conditions (Including Monitoring Report) (*Upload pdf only*)	:	NA
		(v)	Date of site visit	:	NA
	c.	**Details of Consent to Operate**			
		(i)	Whether Consent to operate obtained (Yes/No)?	:	Yes
			If yes,	:	
		(ii)	Upload Copies of all Consent to operate obtained since inception (*Upload pdf only*)	:	Submitted (Renewal application has been submitted to DPCC vide Application no.3289476 dated 14/01/2020)
		(iii)	Date of issue	:	18/05/2018
		(iv)	Valid up to	:	22/01/2020
		(v)	File No.	:	O-031706
		(vi)	Application No.	:	DPCC/WMC/2018/43512
		(vii)	Upload Copy of Consent to operate valid as on date (*Upload pdf only*)	:	Uploaded
	d.	Details of Capacity Expansion (*Multiple Entries Allowed*)			**Not Applicable**

Product/Activity (Capacity/Area)	Quantity From	Quantity To	Unit	Mode of Transport / Transmission of Product

- Unit:- (Tons per Annum(TPA), Mega Watt(MW), Hectares(ha), Kilo Litre per Day(KLD), Tons Crushed per Day(TCD), Cubic Meter per Day, Kilometers(Km), Million Liters per Day(MLD), Others)
- Mode of Transport/Transmission of Product (Road, Rail, Conveyor Belt, Pipe Conveyor, Arial Ropeway,combination of two or three modes, Others)

e. Details of Configuration (*Multiple Entries Allowed*)**Not Applicable**

Plant / Equipment / Facility	Existing Configuration	Proposed Configuration	Final configuration after expansion	Remarks if any

10	**Project Cost**			
	a.	Total Cost of the Project at current price level (in Crores)	:	99.86
	b.	Funds Allocated for Environment Management (Capital) (in Crores)	:	0.54
	c.	Funds Allocated Towards ESC (Entrepreneur Social Responsibility) (in Crores)	:	1.02
	d.	Funds Allocated for Environment Management Plan (EMP) (Recurring per Annum) (in Crores)	:	0.21
11	**Whether project attracts the General Condition specified in the Schedule of EIA Notification (Yes/No)? [provide name of WL/CPA/ESA/Inter-state boundary / International boundary and distance from the project**		:	No
		If Yes		
	a.	Protected Area Notified Under the Wild Life(Protection)	:	

		Act,1972		
	b.	Critically Polluted Areas as identified by the Central Pollution Control Board from Time to Time	:	
	c.	Notified Eco-Sensitive Areas	:	
	d.	Inter-State Boundaries and International Boundaries	:	
12	**Whether projects attract the Specific Condition specified in the Schedule of EIA Notification (Yes/No)?**		:	No
		If Yes		
	a.	If any Industrial Estate/Complex / Export processing Zones /Special Economic Zones/Biotech Parks / Leather Complex with homogeneous type of industries such as Items 4(d), 4(f), 5(e), 5(f), or those Industrial estates with pre-defined set of activities (not necessarily homogeneous, obtains prior environmental clearance, individual industries including proposed industrial housing within such estates /complexes will not be required to take prior environmental clearance, so long as the Terms and Conditions for the industrial estate/complex are complied with (Such estates/complexes must have a clearly identified management with the legal responsibility of ensuring adherence to the Terms and Conditions of prior environmental clearance, who may be held responsible for violation of the same throughout the life of the complex/estate		
13	**Raw Material / Fuel Requirement (*Multiple Entries Allowed*) : Yes**			
	a.	Details of Raw Material / Fuel Requirement		

Raw Material / Fuel	Quantity per Annum	Unit	Source (incase of Import, please specify	Mode of Transport	Distance of Source from Project Site (in Kilo meters) (In case of	Type of Linkage (Linkage / Fuel Supply

				country and Name of the port from which Raw Material / Fuel is received)		import, distance from the port from which the raw material / fuel is received	Agreement / e-auction / MoU / LOA / Captive / Open market / Others)
	Bricks	As per requirement			Road	Near by market	
	Cement	As per requirement			Road	Near by market	
	Concrete	As per requirement			Road	Near by market	

In case of expansion proposals, total requirement of raw material / fuel shall be given

- Unit:- (Tons per Annum(TPA), Mega Watt(MW), Hectares(ha), Kilo Litre per Day(KLD), Tons Crushed per Day(TCD), Cubic Meter per Day, Kilometers(Km), Million Liters per Day(MLD), Others)
- Mode of Transport/Transmission of Product (Road, Rail, Conveyor Belt, Pipe Conveyor, Arial Ropeway,combination of two or three modes, Others)

	b.	Upload copy of Linkage / Fuel Supply Agreement / e-auction / Memorandum of Understanding / Letter of Allocation / Captive source / others.	:	
14	**Baseline Data (Air / Water / Noise / Soil / Ground water table/ Others)**			
	a.	Period of Base Line Data Collection		03 Feb 2020 To 24 Feb 2020
		From (DD/MM/YYYY)	:	03.02.2020
		To (DD/MM/YYYY)	:	24.02.2020
	b.	Season (Summer / Pre-monsoon / Post-monsoon / Winter)	:	Pre-Monsoon
	c.	No. of Ambient Air Quality (AAQ) Monitoring Locations	:	1
	d.	Details of AAQ Monitoring (*Multiple Entries Allowed*)		

Criteria Pollutants	Unit	Maximum Value	Minimum Value	98 Percentile Value	Prescribed Standard
PM2.5	$\mu g/m^3$	157.3	101.7	156.4	60
PM10	$\mu g/m^3$	232.4	185.5	232.2	100
SO2	$\mu g/m^3$	31.9	19.6	31.1	80
NOx	$\mu g/m^3$	92.1	69.9	91.6	80
CO	$\mu g/m^3$	3190	1440	3114	4000

- Criteria Pollutants: - (PM10, PM2.5, SO2, NOx, Others parameters specific to sector)
- Unit: - (Micro Gram per Meter Cube,Nano Gram per Meter Cube,Mili Gram per Meter Cube, NA)

e.	No. of Ground Water Monitoring Locations (*Multiple Entries Allowed*)	:	1

f. Details of Ground Water Monitoring

Criteria Pollutants	Unit	Maximum Value	Minimum Value	98 Percentile Value	Prescribed Standard
pH	-	7.64	7.64	NA	6.5-8.5
TDS	mg/l	1284	1284	NA	500--2000
Total Hardness	mg/l	442	442	NA	200-600
Chlorides	mg/l	283	283	NA	250 -1000
Fluoride	mg/l	0.8	0.8	NA	1-1.5

Criteria Pollutants: - (pH, TSS, TDS, Total Hardness, Chlorides, Fluoride, Heavy Metals, other parameters specific to the sector)

- Unit :- (mg/l, NA)

g.	No. of Surface Water Monitoring Locations	:	1

h. Details of Ground Water Monitoring (*Multiple Entries Allowed*)

Criteria Pollutants	Unit	Maximum	Minimum	98 Percentile	Prescribed

	Value	Value	Value	Standard
pH	-	7.76	7.76	NA	
DO	mg/l	0.6	0.6	NA	
BOD	mg/l	30	30	NA	
COD	mg/l	98	98	NA	
TDS	mg/l	1754	1754	NA	
Coliform	MPN/100 ml	6.8×10^6	6.8×10^6	NA	

- Parameter :- (pH, DO, BOD, COD, Others parameters specific to the sector)
- Unit :- (mg/l, NA)

i.	No. of Ambient Noise Monitoring Locations	:	1
j.	Details of Noise Monitoring (*Multiple Entries Allowed*)		

Parameter	Unit	Maximum Value	Minimum Value	98 Percentile Value	Prescribed Standard
Leq(Day)	dB(A)	64.2	64.2	NA	50
Leq(Night)	dB(A)	48.6	48.6	NA	40

- Parameter:- (Leq(Day),Leq(Night))
- Unit :- (A-weighted decibels(dB(A))

k.	No. of Soil Monitoring Locations (*Multiple Entries Allowed*)	:	9

Parameter	Unit	Maximum Value	Minimum Value	98 Percentile Value
pH	-	7.21	7.21	NA
Electrical Conductivity	µmhos/cm	635	635	NA
Potassium	meq/100gm	0.46	0.46	NA

Sodium	meq/100gm	0.64	0.64	NA
Calcium	meq/100gm	10.1	10.1	NA
Magnesium	meq/100gm	4.31	4.31	NA

- Parameter :- (pH, N(Nitrogen), P(Phosphorus), K(Potassium), Electric Conductivity)
- Unit :- (Millisiemens per Centimeter, Milligram per Litre, Percent, Centimeter per Second,Milliequivalents per 100 Gram, Milligram per Kilogram, Parts per Million, Kilogram per hectare, Others)

	l	**Ground Water Table**		
	i	Range of Water Table Pre-Monsoon Season (Meters Below Ground Level (m bgl)):		
		From	:	6.44
		To	:	24.05
	ii	Range of Water Table Post-Monsoon Season (Meters Below Ground Level (m bgl)):		
		From	:	6.11
		To	:	25.05
	iii	Whether Ground Water Intersection will be there (Yes / No)?	:	No
		If Yes,		
		(i) Upload Copy of Central Ground Water Authority Letter (*Upload pdf only*)	:	
		(ii) Letter No.	:	
		(iii) Date of issue	:	
15	**Details of Water Requirement (During Operation)**(*Multiple Entries Allowed*)			
	a.	Details		

Source	Quantity in KLD	Method of water withdrawal	Distance from Source	Mode of Transport
DJB	464	Others	0	Pipeline

- Source: Surface /Ground Water /Sea /Others
- Mode of Transportation**:** Pipeline /Canal /Others
- Method of water withdrawal: Barrage / Weir / Intake well / Jackwell / Tube well / Open well /

	Others			
	b.	Upload Copy of Permission from Competent Authority (*Upload pdf only*)		
	c.	Letter No.	:	
	d.	Date of issue	:	
	e.	Permitted quantity	:	464
	f.	Whether Desalination is proposed (Yes/ No)	:	No
		If Yes,		
		(i) Desalination capacity (KLD)	:	
		(ii) Quality of Brine (KLD)	:	
		(iii) Mode of Disposal of brine	:	

16 Waste Water Management (During Operation)

Type / Source	Quantity of Waste Water Generated (Kilo Litre per Day)	Treatment Capacity (Kilo Litre per Day)	Treatment Method	Mode of Disposal	Quantity of Treated Water Used in Recycling / Reuse (Kilo Litre per Day)	Quantity of Discharged Water (Kilo Litre per Day)
Waste water going to STP	171	205	STP	Others	137	0
Waste water going to ETP	64	80	ETP	Others	58 (Treated but not used in Recycling / Reuse)	58

	a.	Total Waste Water Generation	:	235 KLD
	b.	Total Discharged Water	:	58 KLD (To the nearby construction site for the purpose of water sprinkling &

				washery of the commercial vehicle tires of the vehicles used in transportation of raw material)
	c.	Total Reused Water	:	137 KLD

17 **Solid Waste Generation Management**(*Multiple Entries Allowed*)

Item	Quantity per Day	Unit	Distance from Site	Mode of Transport	Mode of Disposal
Biomedical waste	0.28	Tons		Others	Authorized Agency
Municipal Solid waste	Others	Municipal Solid waste		Sanitary landfills	

- Item:- (Industrial waste,Municipal Solid waste,Fly ash, Bottom Ash, Hazardous Waste (as per Hazardous and Other Waste Management Rules 2016),E Waste,Bio-Medical waste,Construction & Demolition waste,Plastic Waste,Others)
- Unit:- (Tons,Kiloliter)
- Mode of Disposal**:- (**Treatment, Storage and Disposal Facility(TSDF),Authorized Re-cyclers,Landfills,Sanitary Landfills,Others**)**

18 **Air Quality Impact Prediction** (*Multiple Entries Allowed*)

Criteria Pollutants	Unit	Baseline Concentration	Minimum Value	Incremental Concentration	Total GLC	Prescribed Standard
NO2	$\mu g/m^3$	83.4		0.86	85	80
SO2	$\mu g/m^3$	24.3		0.10	25	80
PM2.5	$\mu g/m^3$	130.7		0.02	131	60
PM10	$\mu g/m^3$	209.9		0.02	210	100

- Parameter:- (PM10, PM, SO2, NOx, Others parameters specific to the sector)
- Unit :- (Microgram per Meter Cube, NA)

19	**Power Requirement –** Yes			
	a.	Quantity (Kilo Volt Amps (KVA))	:	3047
	b.	Source	:	TATA POWER DDL
	c.	Upload Copy of Agreement (*Upload pdf only*)	:	
	d.	Standby Arrangement (Details of DG Sets)	:	3 DG sets of total capacity (2 x 1250 + 1 x 500 KV
	e.	Stack Height (in m)	:	45.3
20	**Land Ownership Pattern (Prior to the project proposal) in Ha**			
	a.	Forest land	:	0
	b.	Private Land	:	0.6852 Ha.
	c.	Government Land	:	0
	d.	Revenue Land	:	0
	e.	Other Land	:	0
		Total land		0.6852 Ha.
21	**Present Land Use breakup in Ha**			
	a.	Agriculture Area	:	0
	b.	Waste/Barren Area	:	0
	c.	Grazing/ Community Area	:	0
	d.	Surface Water bodies	:	0
	e.	Settlements	:	0
	f.	Industrial	:	0
	g.	Forest	:	0
	h.	Mangroves	:	0
	i.	Marine area	:	0
	j.	Others (Specify)	:	0.6852 Ha. (Hospital & other related/ incidental essential facilities)
		Total	**:**	**0.6852 Ha.**

22	**Land requirement for various activities (Multiple entries allowed) in Ha**	:	

Description of Activity / Facility / Plant / Others	Land requirement	Remarks
Built Up Area	2.78	

- Activity / Facility / Plant / Others include: Main Plant, Township, Greenbelt, Ash pond, Quarry area, OB dump Area, Safety zone, Tailing pond, Landfill, Water reservoir, De-salination plant, Area for solid waste management, Built-up area, others

23	**Ecological and Environmental Sensitivity (Within 10 Km):-<u>WLS-Wild Life Species; NPA-Notified Protected Area; ESAs-Eco Sensitive Areas;ESZs- Eco Sensitive Zones)</u>**			
	a.	Details of Ecological Sensitivity	:	**Not Applicable**

Details of Ecological Sensitivity	Name	Distance from the Project (Km)	Remarks

- Details of Ecological Sensitivity**: - (**Critically Polluted Area, WLS, NPA, ESAs, ESZs, Corridors, Wildlife Corridors**)**

	b.	Whether NBWL recommendation is required (Yes/No)?	:	No
		If yes	:	
		Upload NBWL recommendation in PDF	:	
	c.	Details of Environmental Sensitivity	:	

Details of Environmental Sensitivity	Name	Distance from the Project (Km)	Remarks
Forest	Jahanpanah City PF	13.5	SW
Defence Installations	Hindon Air Force Station	8	NE
Others	Central Ridge RF	9.8	W

- Details of Environmental Sensitivity**:- (**Forest, Archaeological Sites, Defence Installations, Others**)**

	d.	Whether NoC / Permission from the competent authority is required (Yes/No)?	:	No
		If yes	:	
		Upload NoC / Permission from the competent authority in PDF	:	
24	**Forest Land**			
	1	Whether any Forest Land involved (Yes/No)?	:	No
		If Yes	:	
	a.	Forests Clearance Status (In-Principle(Stage-I) Approval Obtained / Final (Stage-II) Approval Obtained / Forest Clearance Under Process(Stage-I) / Forest Clearance Under Process(Stage-II) / Application for Forest Clearance yet to be Submitted)	:	
		If In-Principle (Stage-I) Approval Obtained,		
		(i) MoEFCC file number	:	
		(ii) Date of InPrinciple (Stage-I) approval	:	
		(iii) Area diverted	:	
		(iv) Upload FC Letter (Upload pdf only and attach it as Annexure-FC letter)	:	
		If Final (Stage-II) Approval Obtained,		
		(i) MoEFCC file number	:	
		(ii) Date of Final Approval	:	
		(iii) Date of In-Principle Approval	:	
		(iv) Area diverted	:	
		(v) Upload FC Letter*(Upload pdf only and attach it as Annexure-FC letter)*	:	
		If Forest Clearance under process (Stage-I),		
		(i) MoEFCC file number	:	
		(ii) Area applied	:	
		If Forest Clearance under process (Stage-II),		

		(i) MoEFCC file number	:	
		(ii) Area applied	:	
	b.	Legal Status of Forest Land (Reserved, Protected, Private, Village, Others)		
		If Others,		
		Please Specify Others	:	
25	**Tree Cutting, if any**			
	a.	No. of Trees Cut for the Project (if Forestland not involved)	:	14 trees will require cutting/ removal out of which 2 trees will be transplanted. Besides, approx. 40 smaller plants/ trees, would be transplanted at existing site in proposed green areas and along plot boundary.
	b.	Details of Tree Cutting and Planting of Trees (*Upload pdf Only*)	:	Attached as **Annexure V.**
26	**Land Acquisition Status**			
	a.	Acquired Land	:	0.68 Ha.
	b.	Land yet to be acquired	:	0
	c.	Status of Land acquisition if not acquired	:	Acquired
27	**Rehabilitation and Resettlement (R&R)**–Applicable			
	a.	No. of Villages		0
	b.	No. of Households		0
	c.	No. of PDFs (Project Displaced Families)		0
	d.	No. of PAFs (Project Affected Families)		0
	e.	Funds Allocated for R&R		0
	f.	Status of R&R (Completed / In-progress / Yet to start)		NA
28	**Whether there is Presence of Schedule-I Species (Yes/No)?**		:	No

		If yes,		
	a.	Details of Schedule-I Species	:	
	b.	Whether conservation plan for Schedule-I Species has been prepared (Yes/ No)?	:	
		If Yes,		
		(i) Upload conservation plan (Upload only PDF)	:	
		(ii) Fund Provision made	:	
		(iii) Period of Implementation	:	
	c.	Whether conservation plan for Schedule-I Species has been approved by competent authority (Yes/ No)?		
		(i) Upload copy of approval (Upload PDF Only)	:	
		(ii) Letter No.	:	
		(iii) Date of issue	:	
		(iv) Recommendations if any	:	
29	**Whether there is Presence of Water Bodies in Core Area (Yes/No)?**		:	No
		If yes,		
	a.	Details of Water Bodies in Core Area	:	
	b.	Whether there is Diversion required (Yes/No)?	:	
		If yes,		
	c.	Details of diversion required		
	d.	Details of study conducted		
	e.	Whether permission has been obtained from competent authority (Yes/No)?		
		(i) Upload copy of permission (Upload PDF Only)		
		(ii) Letter No.		
		(iii) Date of issue		
		(iv) Recommendations if any		
30	**Whether there is Presence of Water Bodies in Buffer Area (Yes/No)?**		:	Yes

		If Yes		
	a.	Details of Water Bodies in Buffer Area	:	Yamuna River
	b.	Direction of Water Bodies in Buffer Area (North / South / East / West / North East / North West / South East / South West)	:	West
	c.	Distance of Water Bodies in Buffer Area (kilo meters)	:	3.5
31	**Manpower Requirement**			
	a.	Permanent employment during construction	:	
	b.	Permanent employment during operation	:	1314
	c.	Temporary employment during construction	:	
	d.	Temporary employment during operation	:	
	e.	No. of working days	:	300
	f.	Total manpower	:	1314
32	**Green Belt in Ha**			
	a.	In case of new projects	:	
	i.	Total Area of Green Belt		0.15
	ii.	Percentage of Total Project Area	:	21.89
	iii.	No. of Plants to be Planted	:	86
	iv.	Funds Allocated for Plantation	:	95000/-
	v	Upload Green Belt Plan (Upload PDF Only)	:	Uploaded
	b.	Incase of expansion / modernization / change in product mix etc.		

i.

Description	Existing	Proposed	Total
Total Area of Green Belt			0.15
Percentage of Total Project Area			23.12%s
No. of Plants			
Funds Allocated			95000/-

	ii.	Upload Green Belt Plan (Upload PDF Only)		
33	**Project Benefit (*Multiple entry allowed*)**			

Type of Project Benefits	Details of Project Benefit
Physical	
Social	better facility for medical treatment & jobs

(Project benefits shall include environmental, social and others)

34	**Whether the Project / Activity attracts the provisions of CRZ (Yes/No)?**					Not Applicable
	If yes,					
	1	**Project Details**				NA
		a.	CRZ Classification: (CRZ I (A), CRZ I(B), CRZ II, CRZ III, CRZ IV (A), CRZ IV(B))			
		b.	Location type: (Non-Eroding Coast, Low and Medium Eroding Coast, High Eroding Coast)			
		c.	Details of Mangroves Land Involved, if Any			
		d.	Area of Mangroves Land (hectare)			
		e.	EIA (Terrestrial) Studies: (Carried Out, Not Carried Out)			
			If Carried Out,			
			1)	Summary Details of EIA (Terrestrial) Studies		
			2)	Upload Recommendation made in EIAs (Upload pdf only)		
			3)	Period of Study from (EIA Terrestrial)		
			4)	Period of Study to (EIA Terrestrial)		
			If Not Carried out			
				Give Reason		
		f.	EIA (Marine) Studies: (Carried Out, Not Carried Out)			
			If carried out			
			1)	Summary Details of EIA (Marine) Studies		
			2)	Upload Recommendation made in EIAs		
			3)	Period of Study from (EIA Marine)		
			4)	Period of Study to (EIA Marine)		

			If Not Carried out,			
			Give Reason			
		g.	Disaster Management Plan/National Oil Spill Disaster Contingency Plan (if Applicable)			
	2.	**Description of the Project Under Consideration**				NA
		a.	Type of Project: (Resort/Buildings/civic amenities, Coastal Roads/Roads on Stilt, Pipelines from Thermal power Blow Down, Marine Disposal of Treated Effluent, Facility for Storage of Goods/Chemicals, Offshore structures, Desalination Plant, Mining of Rare Earth/Atomic Minerals, Sewage Treatment Plants, Lighthouse, Wind Mills, Others)			
			If Resort/Buildings/civic amenities,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Total Area/Built-up Area (hectare)		
			3)	Height of Structure		
			4)	FSI Ratio		
			5)	The governing Town Planning Rules/Regulations		
			6)	Details of Provision of Car Parking Area		
			If Coastal Roads/Roads on stilt,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Area of Land Reclamation		
			3)	Estimated Quantity of Muck/Earth for Reclamation		
			4)	Carrying Capacity of Traffic		
			If Pipelines from Thermal Power Blow Down,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Length of Pipeline		
			3)	Length Traversing CRZ Area		

			4)	Depth of Excavation		
			5)	Width of Excavation		
			6)	Length of Pipeline from Seashore to Deep Sea		
			7)	Depth of Outfall Point from Surface of Sea Water		
			8)	Temperature of effluent above Ambient at Disposal Point		
			If Marine Disposal of Treated Effluent,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Location of Intake/Outfall		
			3)	Depth of Outfall Point		
			4)	Length of Pipeline		
			5)	Length Traversing CRZ Area		
			6)	Depth of Excavation		
			7)	Width of Excavation		
			8)	Length of Pipeline from Seashore to Deep Sea/Creek		
			9)	Depth of Outfall Point from Surface of Sea Water		
			10)	Depth of Water at Disposal Point		
			11)	Type of Disposal		
			If Facility for Storage of Goods/Chemicals,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Name and Type of Chemical		
			3)	End use of the Chemical		
			4)	No. of Tanks for Storage		
			5)	Capacity of tanks		
			If offshore structures,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Exploration or Development		

			3)	Depth of Sea Bed		
			4)	No. of Rigs/Platform		
			5)	Details of Group Gathering Stations		
			If Desalination Plant,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Capacity of Desalination		
			3)	Total Brine Generation		
			4)	Temperature of Effluent above Ambient at Disposal Point		
			5)	Ambient Salinity		
			6)	Disposal Point		
			If Mining of Rare Earth/Atomic Minerals,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Capacity of Mining		
			3)	Volume/Area to be mined		
			4)	Type of Mineral to be Extracted		
			5)	End use of the Mineral		
			If Sewage Treatment Plants,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Capacity		
			3)	Total Area of Construction		
			4)	Compliance of effluent parameters as laid down by CPCB/SPCB/other authorized agency		
			5)	Whether discharge is in sea water/creek? If yes,		
				Distance of Marine Outfall Point from Shore/from the tidal river bank		
				Depth of Outfall Point from Sea Water Surface		
				Depth of Sea at Outfall Point		
			If Lighthouse,			

			1)	Agency Name for Preparing CRZ Maps		
			2)	Total Area of Construction		
			3)	Height of the Structure		
			If Wind Mills,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Capacity (MW)		
			3)	Transmission Lines: (Overhead, Underground)		
			4)	Diameter of Windmill		
			5)	Length of Blade		
			6)	Speed of Rotation		
			7)	Height of the Structure		
			If Others,			
			1)	Agency Name for Preparing CRZ Maps		
			2)	Please Specify with salient features		
			3)	Upload relevant Document (*Upload pdf only*)		
	3.	**Distance of Project (In Meters) from LTL/HTL to be Stated**				NA
		a.	Clause of CRZ Notification Under which the Project is a Permissible/Regulated Activity			
		b.	Whether CRZ Map Indicating HTL, LTL Demarcation in 1:4000 Scales Prepared? (Yes/No)			
			If Yes,			
			1)	Distance of Project (in meters) from HTL to be Stated		
			2)	Upload Maps(*kml File*)		
			3)	Distance of Project(in meters) from LTL to be Stated		
			4)	Upload Maps (*kml File*)		
		c.	Whether Project Layout Superimposed on CRZ Map 1:4000 Scales?: (Yes/No)			

			If Yes,			
			1)	Upload Maps (*kml File*)		
		d.	Whether CRZ Map 1:25000 Covering 7 km Radius Around Project Site Prepared? (Yes/No)			
			If Yes,			
			1)	Upload Maps (*kml File*)		
		e.	Whether CRZ Map Indicating CRZ-I,II,III and IV Including Other Notified ESAs Prepared?: (Yes/No)			
			If Yes,			
			1)	Upload Maps (*kml File*)		
		f.	NOC from State Pollution Control Boards Obtained: (Yes/No)			
			If Yes			
			1)	Upload Copy of NOC (*Upload pdf only*)		
		g.	Details of Rain Water Harvesting System			
	4.	**Recommendation of State Coastal Zone Management Authority**				
		a.	Upload Copy of CZMA (*Upload pdf Only*)			
		b.	State the Conditions Imposed			
		c.	Social and Environmental Issues and Mitigations Measures Suggested Including but not Limited to R&R, Water, Air, Hazardous Wastes, Ecological aspects, etc. (Brief Details to be Provided)			
35	**Sector Specific Details for New Construction Projects and Industrial Estates**					
	1.	**Details of Building Construction:**				
		a.	Maximum Height of the Building (Meters)			39.3
		b.	Total No. of Flats to be Build			0
		c.	No. of Buildings			2
		d.	Total plot area (sqm)			6852.64

		e.	Total built up area (sqm)		27862.512
	2.	**Foreshore Facilities and/or Marine Disposal:**			
		a.	Whether Project Involves Foreshore Activities and/or marine Disposal?		No
	3.	**Rain Water Harvesting:**			
		a.	No. of Storage		0
		b.	Capacity		0
		c.	No. of Recharge Pits		2
		d.	Capacity		2
	4	**Parking:**			
		a.	Details of 4 Wheeler/ 2 Wheeler Parking		327
	5	**Energy Saving Measures:**			
		a.	Source/Mode		LED/SOLAR
		b.	Percentage		10
		c.	Quantity		137
	6	**Other details:**			
		a.	Details of impact on Water Bodies and Drainage patters of catchment area		NA
		b.	Details of Traffic Density Impact Assessment and Modelling Study		uploaded
		c.	In case Underground Tunnel Project below the Forest Land - Subsidence Impact Study report		NA
	7.	**Type of Industries to be established with Industrial Estate as per their category A/B**			
		Type of Industry	No. of Units	Category A/B	
		NIL			
	8.	**Length of the alignment**			NA
	9.	**Details Bridges/ROB/Interchanges, Flyovers, Vehicle Underpass and Pedestrian Underpass**			Not Applicable
36	**Details of Court Cases if any**				**No**
	a.	Whether there is any Court Cases pending against the			

		project and/or land in which the project is proposed to be set up (Yes/No)?		
		If Yes,		
	b.	Name of the Court (Districts *Court / High Court / NGT / Tribunals / Supreme Court of India*)		
		If name of Court: (Districts Court, High Court, NGT, Tribunals)		
	c.	Name of the Sub-court		
	d.	Case No.		
	e.	Orders/Directions of the court,if any and its relevance with the proposed project		
	f.	Case Details		
	g.	Upload Court Order if any (*Upload pdf Only*)		
37	**Details of direction issuedunder Environment (Protection) Act / Air (Prevention & Control of Pollution)) Act / Water (Prevention & Control of Pollution) Act**			
	a.	Whether any direction issued under Environment (Protection) Act/Air (Prevention & Control of Pollution)) Act/Water (Prevention & Control of Pollution) Act(Yes/No)?		**No**
		If yes,		
	b.	Details of directions issued under Environment (Protection) Act/Air (Prevention & Control of Pollution)) Act/Water (Prevention & Control of Pollution) Act		
	c.	Upload copy of directions issued under Environment (Protection) Act/Air (Prevention & Control of Pollution)) Act/Water (Prevention & Control of Pollution) Act		
	d.	Compliance status of the directions		
38	**Details of EIA Consultant**			
	a.	Have you hired Consultant for preparing document(Yes/No)?	:	Yes

		If No,		
		(i) Reason for not engaging the Consultant	:	
		If Yes,		
		(i) Accreditation No.	:	NABET/EIA/1821/SA 0110
		(ii) Name of the EIA Consultant	:	Grass Roots Research and Creation India (P) Ltd.
		(iii) Address		F-375, Sector 63, Noida
		(iv) Mobile No.	:	
		(v) Landline No.	:	0120-4044630
		(vi) E-mail Id	:	eia@grc-india.com
		(vii) Category of Accreditation (Eligible for Category A / Eligible for Category B)	:	A
		(viii) Sector of Accreditation	:	New Construction Projects and Industrial Estate
		(ix) Validity of Accreditation	:	14th Feb 2021
		(x) Upload Certificate of Accreditation certified by QCI/NABET (*Upload pdf Only*)	:	Submitted
39	**Documents to be attached**			
I	***If Project Type is New / Expansion / Modernization / one-time capacity expansion for coal mining:***			
	a.	Upload Copy of EIA/EMP Report		Uploaded
	b.	Upload Copy of Risk Assessment Report		Uploaded
	c.	Upload Copy of Feasibility Report/ Detailed Project Report(DPR) /Detailed Engineering Report /Detailed Conceptual Plan / Approved Mining Plan (in case of Mining proposals) (*Upload pdf only*)		Uploaded
	d.	Upload Copy of Final Layout Plan (*Upload pdf only*)		Uploaded
	e.	Upload Cover Letter*(Upload pdf only and attach it as Annexure-document of Cover letter)*		Uploaded
	f.	Upload a copy of documents in support of the competence/authority of the person making this application		Uploaded

		to make application on behalf of the User *Agency (Upload pdf only and attach it as Annexure-authorization)*		
	g.	Upload copy of District Survey Report (for mining of minor minerals only)		N/A
		Upload copy of Replenishment Study Report & Baseline Survey data (for river sand mining proposals only)		N/A
	g.	Upload Additional File, if any (*Upload pdf only*)		N/A
II	***If Project Type is other than New / Expansion / Modernization / one-time capacity expansion for coal mining: -***			Not Applicable
	a.	Upload Copy of Feasibility Report/ Detailed Project Report(DPR) /Detailed Engineering Report /Detailed Conceptual Plan (*Upload pdf only*)		
	b.	Upload Copy of Final Layout Plan (*Upload pdf only*)		
	c.	Upload Cover Letter*(Upload pdf only and attach it as Annexure-document of Cover letter)*		
	d.	Upload a copy of documents in support of the competence/authority of the person making this application to make application on behalf of the User Agency*(Upload pdf only and attach it as Annexure-authorization)*		
	e.	Upload Additional File, if any*(Upload pdf only)*		
	f.	Upload Updated Form1*(Upload pdf only)*		
40	**Undertaking**			
	a.	I hereby give undertaking that the data and information given in the application and enclosures are true to be best of my knowledge and belief and I am aware that if any part of the data and information found to be false or misleading at any stage,the project will be rejected and clearance given,if any to the project will be revoked at our risk and cost. In addition to above,I hereby give undertaking that no activity / construction / expansion has since been taken up		
	b.	Name	:	OP Gupta
	c.	Designation	:	Founder Member
	d.	Company	:	SHRI MUKANDILAL

				MEMORIAL FOUNDATION FOR HEART & MEDICAL CARE
	e.	Address	:	2, institutional Area, Vikas Marg Extension, Karkardooma, Delhi

*****

Annexure II

SHANTI MUKAND HOSPITAL

DETAILS OF EXISTING TREES PROPOSED TO BE CUT/ TRANSPLANTED FOR PROPOSED EXPANSION (BLOCK-C)

1. The existing site where new Block-C is proposed to be constructed currently houses Chemist Shop, DG Set & Manifold Room, Transformer Area and HT/ Meter Rooms. The remaining area is used for scooter parking and as green lawn (Refer **Figure-1**).

2. The proposed construction of Block-C & its Basement will require cutting/ removal of **14 trees** from the site (Refer **Figure-2 & Table** below). Trees on the periphery of the plot will not be removed/ disturbed.

3. Many smaller plants/ trees, approx. 40 in numbers would be transplanted at existing site in proposed green areas and along plot boundary. Compensatory plantation for each tree to be felled will be carried out as per norms.

4. Out of the 14 trees listed below for cutting, every effort would be made to transplant the identified trees, using latest techniques under the guidance of Trees/ Horticulture Experts.

Tree Label	Tree/ Species Local/ Botanical Name	Girth Size (inches)	Proposed for Cutting/Transplantation	Remarks
1	Pilkhan (Ficus virens)	118”	Cutting	
2	Pilkhan (Ficus virens)	102”	Cutting	
3	Pilkhan (Ficus virens)	105”	Cutting	
4	Peepal (Ficus Religiosa)	36”	Cutting	
5	Tun (Toona Ciliata)	70”	Cutting	
6	Tun (Toona Ciliata)	38”	Cutting	
7	Champa (Plumeria Obtusa)	19”	Transplantation	See sr. 4 above
8	Neem (Azadirachta Indica)	50”	Cutting	
9	Berikai	24”	Cutting	
10	Badaam	32”	Cutting	
11	Tun (Toona Ciliata)	25”	Cutting	
12	Badam	19”	Transplantation	See sr. 4 above
13	Tun (Toona Ciliata)	25”	Cutting	
14	Tun (Toona Ciliata)	42”	Cutting	

OTHER'S PLOT

OTHER'S PLOT

EXISTING ROAD

J I H G F E

K

L

M

N

D

C

B

A

CHEMIST SHOP & CANTEEN

D.G.SET & MANIFOLD ROOM

TRANSFORMER

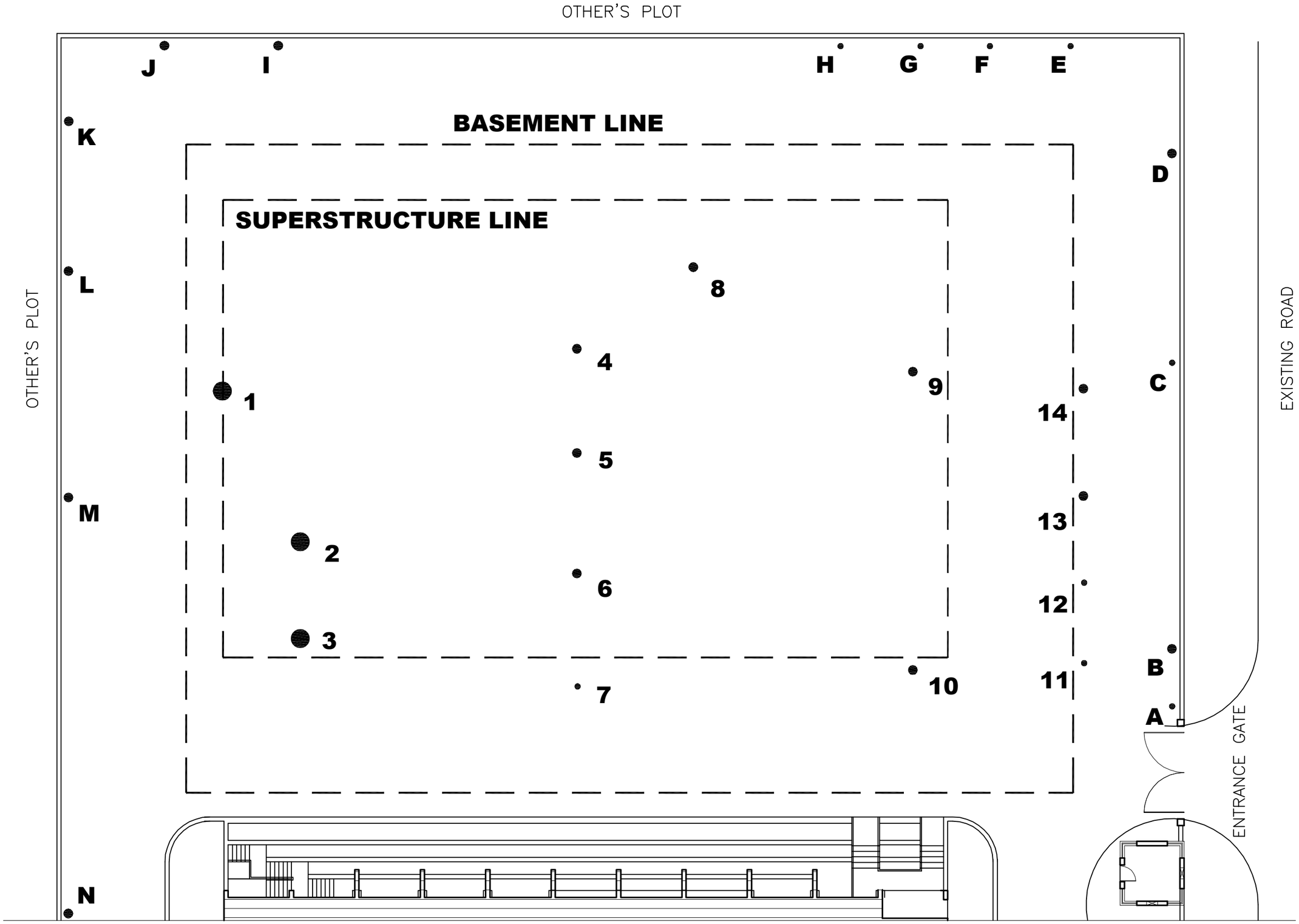
H.T.ROOM & METER ROOM

1 2 3 4 5 6 7 8 9 10 11 12 13 14

SCOOTER PARKING AREA

ENTRANCE GATE

TREE LAYOUT PART PLAN (EXISTING)



TREE LAYOUT PART PLAN
AFFECTED BY BLOCK-C CONSTRUCTION

Annexure III

GST No. : 09ASMPA3509J1ZP

- Structural Design
- Contractor
- Trunkeyes Projects
- PMC

MAC CONSULTING ENGINEERS

(A Complete Structure Solutions)

PKB-33A, IIIrd Floor, Sector-122, Behind CNG Station
Disttict Gautam Budh, Nagar, Noida (U.P.)
Mob.: 8826021424, 9350978214
Email : macconsultingengineers@gmail.com
Website : www.macconsultingengineers.com

Ref. No.

Date.....

Date: 11th August, 2020

ALTERATION PERMISSIBILITY & STRUCTURAL SAFETY CERTIFICATE

I, MUSHAHID ALI, Structural Engineer, certify that for the proposed Expansion of **Shanti Mukand Hospital**, at 2, Institutional Area, Vikas Marg Extension, Karkardooma, Delhi – 110092, I have reviewed that structural design and drawings including foundation drawings of existing Block-B of the hospital with a view to assess the feasibility and permissibility for vertical expansion of the Block-B by adding three (3) new floors on the existing B+G+3 construction.

Based on the structural analysis & design of the extended structure B+G+6 as per latest editions of National Building Code (2016) and prevailing codes of Bureau of Indian Standards for structural design & safety, it is certified that the extended building is considered safe in accordance with the permissible stresses, slenderness ratio, and soil bearing pressure.

Further, it is certified that the entire structure including the existing foundations can withstand the Gravity, Wind and Earthquake loads safely. The seismic zone considered in the design is Zone-IV as per IS 1893 Part 1-2016.

I further certify that the building with proposed alterations is safe for the purpose it has been designed for.

Signature:

Name of Structural Engineer

M/s MAC Consulting Engineers

SOLID WASTE GENERATION

Solid waste would be generated both during the construction phase. The solid waste expected to be generated during the construction phase will comprise of excavated materials, used bags, bricks, concrete, MS rods, tiles, wood etc. The following steps are proposed to be followed for the management solid waste:

- Construction yards are proposed for storage of construction materials.
- Remaining soil shall be utilized for refilling / road work / rising of site level at locations/ selling to outside agency for construction of roads etc.

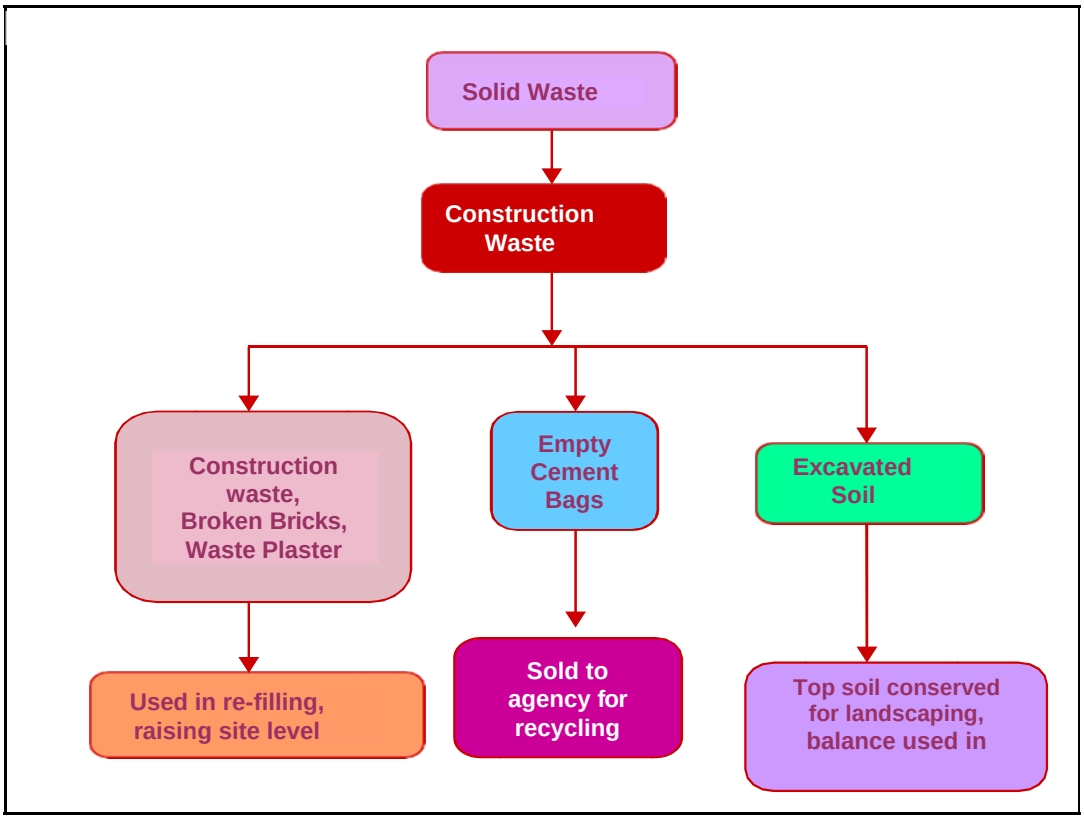


Figure 1: Solid Waste Management Scheme (Construction Phase)

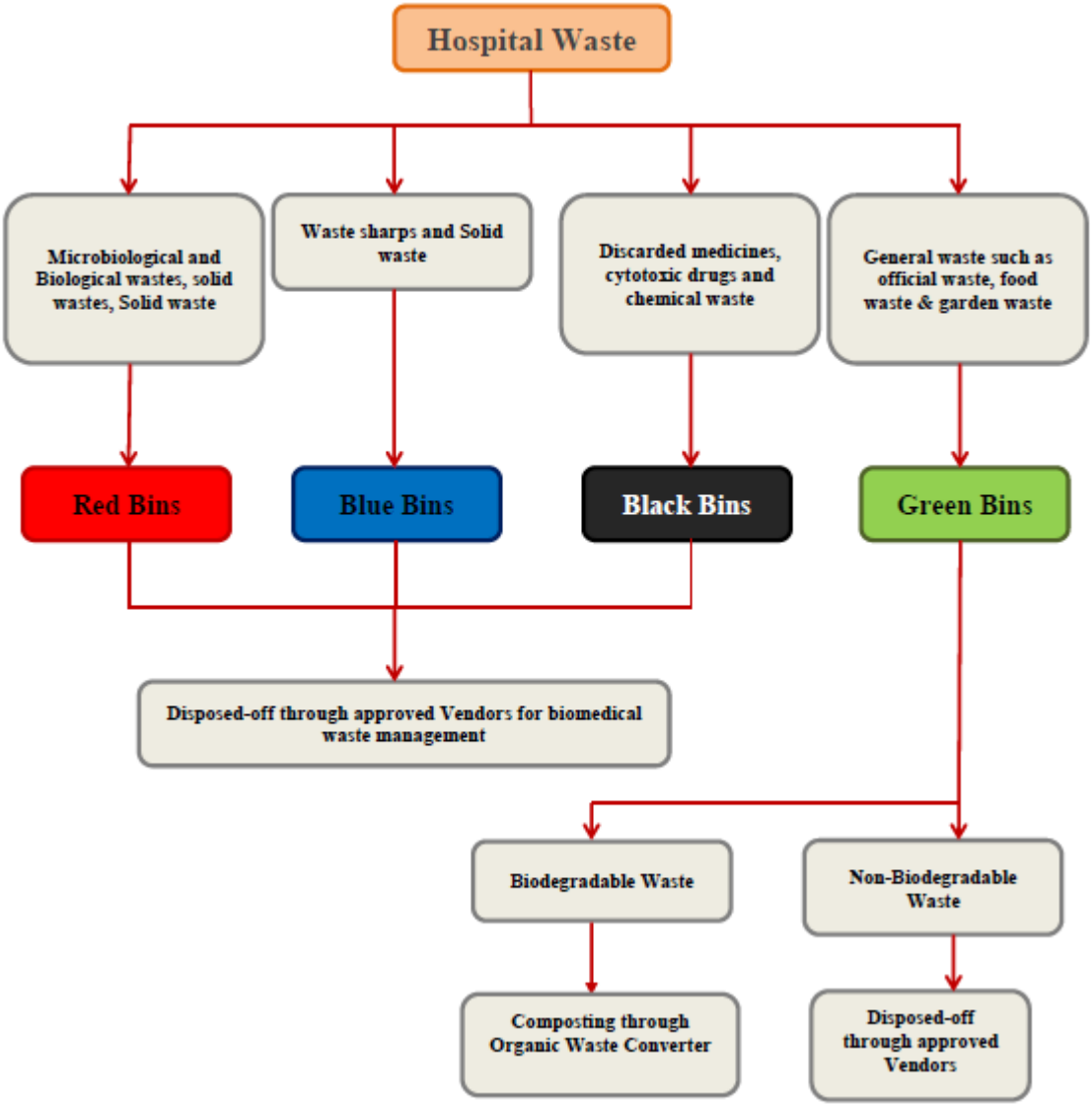


Figure 2: Solid Waste Management Scheme (Operation Phase)

The solid waste generated during operation phase of the project shall be approx. 1,117 kg/day Inpatients, @ 0.5 kg per capita per day for staff and @ 0.15 kg/day for outpatients, ETP sludge and STP sludge). It is estimated that there will be a Bio medical waste generation of approx. 279 kg/day. Following arrangements will be made at the site in accordance to Municipal Solid Waste (Management and Handling) Rules, 2016 and Bio-Medical Waste (Management and Handling) Rules, 1998.

Table 1: Calculation of Total Solid Waste Generation

S. No.	Category	Waste (Kg/capita/day)	Waste generated (kg/day)
1.	Inpatients*	400 @ 1.5 kg/bed/day	600
2.	Staff (Doctors + Visitors)	1314 @ 0.25 kg/day	326
3.	Out-Patients	1000 @ 0.15 kg/day	150
4.	Landscape waste (0.39 acre)	@0.2 kg/acre/day	1
	Total Municipal (domestic) Waste		**1,077 kg/day**
5.	STP Sludge		26
6.	ETP Sludge		14
	Total Solid Waste		**1,117 kg/day**
	*Bio-Medical waste	@ 25% of the waste generated/bed	**279 kg/day**

**As per the Bio-medical waste (Management and Handling) Rules, 2016.*

- **Collection and Segregation of Waste**

For Hospital waste collection, adequate numbers of colored bins (Red, Yellow, Black, Blue and dark blue bins) are proposed to be provided at the strategic locations of the Hospital area.

Red bins: For the disposal of IV tubings, plastic bottles, syringes without needles, drainage tubes, catheters, locally autoclaved microbiological waste.

Yellow bins: For the disposal of anatomical parts, amputated body parts, placenta. Items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines, bedding, other material contaminated with blood.

Black bins: For the discard of paper, wrappers, tissue and other general items.

Blue bins: For the disposal of glass bottles, ampoules, broken glass, vials, other glass items.

Dark Blue bins: For the disposal of sharps. Does not contain disinfectant. Includes needles, stillet, lancets and blades.

- **Treatment of Waste**

➢ Biodegradable Waste

Bio-degradable waste will be treated onsite through an approved Vendor in accordance with the Bio-Medical Waste (Management and Handling) Rules, 2016.

➢ Recyclable waste

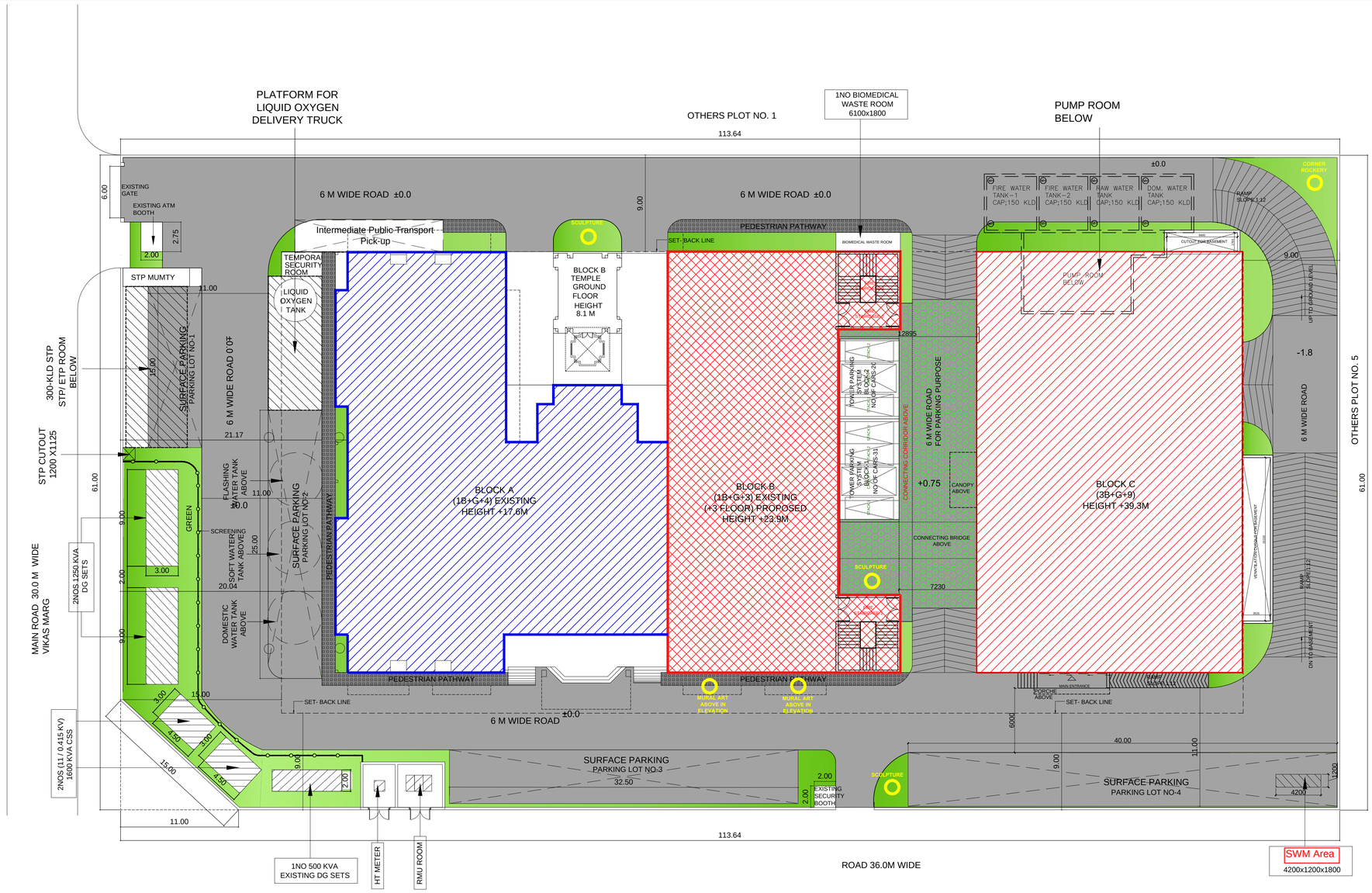
Grass Recycling The cropped grass will be spread on the green area. It will act as manure after decomposition.

Recyclable wastes like paper, plastic, metals etc. will be sold off to recyclers.

- **Disposal**

Recyclable and non-recyclable waste will be disposed through Govt. approved agency.

Annexure IV(b)



TOTAL PLOT AREA	**6852.64 SQ.M**	
PERMISSIBLE GROUND COVERAGE (40% OF TOTAL PLOT AREA)	2741.06 SQ.M	40%
EXISTING GROUND COVERAGE OF BLOCK A+B	1663.612 SQ.M	24.28%
PROPOSED GROUND COVERAGE OF NEW BLOCK	748.33 SQ.M	10.92%
TOTAL GROUND COVERAGE	2411.94 SQ.M	35.20%
TOTAL PLOT AREA	**6852.64**	
PERMISSIBLE FLOOR AREA RATIO	3.75	25697.40 SQ.M
EXISTING FLOOR AREA RATIO (BY BLOCK A+B)	1.207	FLOOR AREA OF BLOCK A+B(8276.064)/TOTAL PLOT AREA(6852.64)= 1.207
PROPOSED FLOOR AREA RATIO (PROPOSED FLOORS + PROPOSED BLOCK C	1.575	(1912.56+8882.66)/6852.64 = 1.575
TOTAL FLOOR AREA RATIO (EXISTING + PROPOSED)	2.78	EXISTING FLOOR AREA RATIO(8276.064) + PROPOSED FLOOR AREA RATIO(10795.22)/PLOT AREA(6852.64) = 2.78
PERMISSIBLE HEIGHT	45 M	
PROPOSED HEIGHT	39.3 M	
PARKING CALCULTIONS		
PERMISSIBLE EQUIVALENT CAR SPACE (E.C.S) FOR BLOCK A+B	1.33ECS/100SQ.M	
PERMISSIBLE EQUIVALENT CAR SPACE FOR PROPOSED FLOORS & BLOCK	2ECS/100SQ.M	

SURFACE PARKING AREA

Parking Lot No.	Length	Breadth	Total
P1	15	11	165
P2	25	11	275
P3	32.5	11	357.5
P4	40	11	440
TOTAL AREA			**1238**

PARKING REQUIRED AS PER TOTAL FLOOR AREA RATIO	110.07×215.90 = 325.98	**326 ECS**
PARKING CALCULATION	**TOTAL AREA (SQ.M)**	**ECS ACHIEVED**
BASEMENT 2 (2 STACK Automated PARKING) (AREA/32*2)	1371.47	86 ECS
BASEMENT 3 (3 STACK Automated PARKING) (AREA/32*3)	1452.28	136 ECS
SURFACE PARKING (AREA/23)	1238	54 ECS
Automatic parking system (2 blocks)		51 ECS
TOTAL NO. OF ACHIEVED PARKING		**327**

Shanti Mukand Hospital : FAR AREAS

FLOORS	BLOCK A (SQ.M)		BLOCK B (SQ.M)		BLOCK C (SQ.M)		TOTAL AREA (SQ.M)	
	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED	EXISTING	PROPOSED
BASEMENT 1	551.675	-	622.528	-	-	1016.55	1174.203	1016.55
BASEMENT 2	-	-	397.226	-	-	(FREE FROM F.A.R)	397.226	(FREE FROM F.A.R)
BASEMENT 3	-	-	-	-	-	(FREE FROM F.A.R)	-	(FREE FROM F.A.R)
GROUND FLOOR	915.28	-	812.324*	-	-	659.82	1727.604	659.82
FIRST FLOOR	854.567	-	655.386	-	-	631.45	1509.953	631.45
SECOND FLOOR	651.26	-	922.165	-	-	838.58	1573.425	838.58
THIRD FLOOR	651.26	-	980.242	-	-	838.58	1631.502	838.58
FOURTH FLOOR	-	-	262.151**	637.52	-	873.15	262.151	1510.67
SERVICE FLOOR	-	-	-	-	-	(FREE FROM F.A.R)	-	(FREE FROM F.A.R)
FIFTH FLOOR	-	-	-	637.52	-	860.61	-	1498.13
SIXTH FLOOR	-	-	-	637.52	-	838.7	-	1476.22
SEVENTH FLOOR	-	-	-	-	-	791.93	-	791.93
EIGHT FLOOR	-	-	-	-	-	776.99	-	776.99
NINTH FLOOR	-	-	-	-	-	756.3	-	756.3
TOTAL FLOOR AREA	**3624.042**	0	**4652.02***	**1912.56**	**0**	**8882.66**	**8276.064**	**10795.22**
F.A.R	**3624.042/6852.64=0.528**	0	**4652.02/6852.64 =0.678**	**1912.56/6852.64 =0.279**	**0**	**8882.66/6852.64 =1.296**	**8276.064/6852.64=1.207**	**10795.22/6852.64 =1.575**
NO. OF CAR PARKING REQUIRED	**1.33ECS/100 SQ.M**	**0**	**1.33ECS/100 SQ.M**	**2ECS/100 SQ.M**	**0**	**2ECS/100 SQ.M**	**1.33ECS/100 SQ.M**	**2ECS/100 SQ.M**
NO. OF CAR PARKING REQUIRED	**48.20**	**0**	**61.87**	**38.25**	**0**	**177.65**	**110.07**	**215.90**

*INCLUDES TEMPLE (51.049 sq m) AND GUARD ROOM AREA (12.943)
**EXISTING AREA AFTER ADDITION OF FLOORS ON BLOCK-B = TOTAL FOURTH FLOOR AREA - AREA TO BE DEMOLISHED = 462.489 - 200.338 = 262.151

Shanti Mukand Hospital : FAR and Non-FAR Areas

Floor	FAR Area (in sq.m)				Non-FAR Area (in sq.m)				Total Built up Area (in sq.m)				
	Existing Building		Proposed	TOTAL AREA	Existing Building		Proposed		TOTAL AREA	Existing Building		Proposed		TOTAL AREA
	Block-A	Block-B	Block B & Block-C		Block-A	Block-B	Block B & Block-C	Fire Staircases (Block-B)		Block-A	Block-B	Block B & Block-C	Fire Staircases (Block-B)	
Basement-1	551.675	622.528	1016.55	2190.753	340.884	14.508	667.290	83.640	1022.682	892.559	637.036	1683.840	83.640	3213.435
Basement-2	-	397.226	-	397.226	-	14.508	1683.840	-	1698.348	-	411.734	1683.840	-	2095.574
Basement-3	-	-	-	-	-	-	1683.840	-	1683.840	-	-	1683.840	-	1683.840
Ground floor	915.28	812.324	659.82	2387.424	30.530	4.627	311.020	83.640	346.177	945.810	816.951	970.840	83.640	2733.601
1st floor	854.567	655.386	631.45	2141.403	74.903	39.201	339.390	83.640	453.494	929.470	694.587	970.840	83.640	2594.897
2nd floor	651.26	922.165	838.58	2412.005	36.892	29.524	132.260	83.640	198.676	688.152	951.689	970.840	83.640	2610.681
3rd floor	651.26	980.242	838.58	2470.082	36.892	31.126	132.260	83.640	200.278	688.152	1011.368	970.840	83.640	2670.360
4th floor	-	262.151	1510.67	1772.821	-	17.363	269.360	83.640	286.723	-	279.514	1780.030	83.640	2059.544
Service floor	-	-	-	-	-	-	970.840	-	970.840	-	-	970.840	-	970.840
5th floor	-	-	1498.13	1498.130	-	-	269.320	83.640	269.320	-	-	1767.450	83.640	1767.450
6th floor	-	-	1476.22	1476.220	-	-	336.630	83.640	336.830	-	-	1813.050	83.640	1813.050
7th floor	-	-	791.93	791.930	-	-	178.910	-	178.910	-	-	970.840	-	970.840
8th floor	-	-	776.99	776.990	-	-	261.450	-	261.450	-	-	1038.440	-	1038.440
9th floor	-	-	756.3	756.300	-	-	214.540	-	214.540	-	-	970.840	-	970.840
Total (sq. m.)	3624.042	4652.022	10795.220	19071.284	520.101	150.857	7451.150	669.120	8791.228	4144.143	4802.879	18246.370	669.120	27862.512
	8276.064		10795.220		670.958		8120.270			8947.022		18915.490		

EXISTING

PROPOSED VERTICAL EXPANSION ON EXISTING

PROPOSED NEW EXPANSION

SUBMISSION DRAWING

ADDITIONAL CONSTRUCTION OF SHANTI MUKAND HOSPITAL KARKARDOOMA, DELHI

KEY PLAN

NOTE:-
Where the lighting and Ventilation requirements are not met through day lighting and Natural ventilation, the same shall be ensured through Artificial lighting and Mechanical ventilation as per Part VIII Building Services Section I, Lighting and Ventilation of National Building Code of India Published by the Indian Standards Institution.

OWNER'S SIGN

ARCHITEC'S SIGN

TITLE

SITE PLAN

DATE	10/02/2020
SCALE	1:150
DRAWN BY	MIPUL
DWG. NO.	SMH/ARCH/CDA//01
CHD BY	SHABNAM

ARCHITECT
CREATIVE DESIGNER
UNIT 710-712,DLF PRIME TOWER, OKHLA PHASE -1
DELHI-110020
creativedesigner.1@gmail.com

01

Annexure V

SHANTI MUKAND HOSPITAL (SMH)

PLAN FOR CORPORATE ENVIRONMENT RESPONSIBILITY (CER)

A. Related Key Facts about SMH

1. **Shanti Mukand Hospital (SMH)** is a unit of Shri Mukandi Lal Memorial Foundation for Heart and Medical Care (MMF) which is a **Public Charitable Institution**, registered under 12A of the Income Tax Act.

2. Being a **Non-Profit Institution**, the income of the hospital is exempted from the payment of any Income Tax, and the **Donations** made to this Charitable Organization are exempted from the payment of Income Tax in the hands of donors u/s 80G of the Income Tax Act, 1961.

3. For past 25 years of our operations, as part of our responsibility towards the Society, we are continuously providing absolutely **FREE medical services** to the poor and needy, without any distinction of cast, colour, creed, race, & religion of the patient. **The amount of FREE work done by us in the last two financial years is approx. Rs. 6.5 crores**.

B. Proposed Plan for Corporate Environment Responsibility (CER)

As per the Ministry's Office Memorandum F. No. 22-65/2017-IA.III dated 1st May 2018, we propose our plan for Corporate Environment Responsibility (CER) as follows:

1. We shall undertake following activities which shall be beneficial for the neighboring areas in particular and East Delhi in general:

   a) Free/Concessional **Medical/Health services to Indoor patients**(#).
   b) Free/Concessional **Medical/Health services to Outdoor patients**(#).
   c) Free **Health Checkup & Awareness Camps** for the Society/ general public in nearby residential areas.
   d) **Health Education** to young doctors by conducting CME's and to students in neighboring schools.

e) Free/concessional **Medical/ Health services to students** in neighboring schools.

(#) Deserving Patients living below Poverty Lines and/or other patients admitted/ coming to SMH

2. The funds proposed to be earmarked under CER for each of the above activities at 1% of Project Cost for a period of next three (3) financial years are as follows:

S. No.	ACTIVITY	YEAR-WISE IMPLEMENTATION BUDGET (INR, Lakh)			TOTAL BUDGET (INR, Lakh)
		1st Year (2021-2022)	2nd Year (2022-2023)	3rd Year (2023-2024)	
1.	**Medical/Health services to Indoor patients**	18.0	18.0	18.0	54.0
2.	**Medical/Health services to Outdoor patients**	6.0	6.0	6.0	18.0
3.	**Health Checkup & Awareness Camps**	5.0	5.0	5.0	15.0
4.	**Health Education**	3.0	3.0	3.0	9.0
5.	**Medical/ Health services to Neighboring Schools**	2.0	2.0	2.0	6.0
	TOTAL BUDGET PROPOSED FOR CER (INR, Lakh)				**102.0**

3. Although the CER plan presented above is for next three financial years, once the proposed expansion of the Hospital is completed and new facilities become operational, the activities proposed for CER shall continue at a much higher level.

C. Request for SMH as CER Beneficiary in other Projects

1. Shanti Mukand Hospital (SMH), being a Non-profit, Charitable institution, should qualify as a Beneficiary Institution as per CER mandate for various new Greenfield and Brownfield projects being considered by EAC.

2. It is respectfully requested that our Institution's name may kindly be included in the list of CER Beneficiaries for the CER earmarked funds to be spent by the Project Proponents of other new projects.

Annexure VI

UPDATED APPLICATION

w.r.t.

EXPANISON OF SHANTI MUKAND HOSPITAL

At

2, INSTITUTIONAL AREA, VIKAS MARG EXTENSION, KARKARDOOMA, DELHI

For

SHRI MUKANDILAL MEMORIAL FOUNDATION FOR HEART & MEDICAL CARE

May, 2020

Schedule: 8(a), Category: B
Built Up Area – **27,862.512** m^2

QCI Certificate no. NABET/EIA/1821/SA 0110

PREPARED BY

GRASS ROOTS RESEARCH & CREATION INDIA (P) LTD.
(Accredited by QCI/NABET, Approved by MoEFCC, GoI, ISO 9001:2008 Certified Co.)
F-374 & 375, Sector-63, Noida, U.P.
Ph.: 0120- 4044630, Telefax: 0120- 2406519
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Website: http://www.grc-india.com
GRC INDIA TRAINING & ANALYTICAL LABORATORY
(Accredited by NABL, Recognized by MoEF&CC, GoI)
A unit of GRC India

FORM I

w.r.t.

EXPANISON OF SHANTI MUKAND HOSPITAL

At

2, INSTITUTIONAL AREA, VIKAS MARG EXTENSION, KARKARDOOMA, DELHI

For

SHRI MUKANDILAL MEMORIAL FOUNDATION FOR HEART & MEDICAL CARE

May, 2020

Schedule: 8(a), Category: B
Built Up Area – **27,862.512** m^2

QCI Certificate no. NABET/EIA/1821/SA 0110

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FORM- I

(I) Basic Information

S. No.	Item	Details
1.	Name of the project/s	Expansion of Shanti Mukand Hospital
2.	S. No. in the schedule	8 (a): Building & Construction Project
3.	Proposed capacity/ area/ length/ tonnage to be handled/ command area/ lease area/ number of wells to be drilled.	**Plot Area** = **6,852.64 m2** **Built Up Area = 27,862.512 m^2**
4.	New/Expansion/Modernization	Expansion
5.	Existing Capacity/Area etc.	Existing Built up area = 8,947.022 m^2
6.	Category of Project i.e. 'A' or 'B'	Category B
7.	Does it attract the general condition? If yes, please specify.	No
8.	Does it attract the specific condition? If yes, please specify.	No
9.	Location Plot/Survey/Khasra No. Village Tehsil District State	**Latitude:** 28°38'43.88"N **Longitude:** 77°18'07"E 2 Institutional Area Vikas Marg Extension Karkarddoma Delhi
10.	Nearest railway station/airport along with distance in kms.	**Nearest Railway Station:** Anand Vihar Railway Station- 1.5 km (ENE) **Nearest Airport:** Indira Gandhi International Airport- 20 km (WSW) **(Source of information:- Google Image)**

11.	Nearest Town, city, District Headquarters along with distance in kms.	The Project lies in Karkardooma, Delhi.
12.	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	East Delhi Municipal Corporation Vishwas Nagar Extension, Vishwas Nagar, Shahdara, New Delhi, Delhi 110032 Phone: 011 2230 3700
13.	Name of applicant	Shri Mukandilal Memorial Foundation for Heart & Medical Care
14.	Registered Address	2, Institutional Area, Vikas Marg Extension, Karkarddoma, Delhi
15.	Address for correspondence : Name Designation (Owner/Partner/CEO) Address Pin Code Telephone No. Fax No. E-mail	Shri Mukandilal Memorial Foundation for Heart & Medical Care Mr. O.P. Gupta Founder Member 2, Institutional Area, Vikas Marg Extension, Karkarddoma, Delhi 110092 011-47276600 ceo@shantimukand.com
16.	Details of Alternative Sites examined, if any. Location of these sites should be shown on a toposheet.	No
17.	Interlinked Projects	No
18.	Whether separate application of interlinked project has been submitted?	No
19.	If yes, date of submission	Not Applicable

20.	If no, reason	Not Applicable
21.	Whether the proposal involves approval/ clearance under: if yes, details of the same and their status to be given. (a)The forest (Conservation) act, 1980? (b) The wildlife (Protection) act, 1972? (C) The C.R.Z Notification, 1991?	No
22.	Whether there is any Government Order/Policy relevant/relating to the site?	No
23.	Forest land involved (hectares)	No
24.	Whether there is any litigation pending against the project and /or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	No

(II) Activity

1. Construction, operation or decommissioning of the Project involving actions, which will cause physical changes in the locality (topography, land use, changes in water bodies, etc.)

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities /rates, wherever possible) with source of information data
1.1	Permanent or temporary change in land use, land cover or topography including increase in intensity of land use (with respect to local land use plan)	**No**	The project is expansion of an existing Hospital building; hence no change will occur in landuse.
1.2	Clearance of existing land, vegetation and buildings?	**Yes**	14 trees will require cutting/ removal out of which 2 trees will be transplanted. Besides, approx. 40 smaller plants/ trees, would be transplanted at existing site in proposed green areas and along plot boundary.
1.3	Creation of new land uses?	**No**	The project is expansion of an existing Hospital building; hence no change will occur in landuse.
1.4	Pre-construction investigations e.g. bore houses, soil testing?	**Yes**	Soil investigation has been done during the study.
1.5	Construction works?	**Yes**	All construction activities will be confined within the project premises; there will be no physical changes outside the project boundary.
1.6	Demolition works?	**No**	Project site is vacant land. Demolition is not required.

1.7	Temporary sites used for construction works or housing of construction workers?	**Yes**	All the construction activity including stocking of raw materials will be confined within the project site only. No temporary labor hutments are proposed. Local labors from nearby area will be hired. Sanitation facilities will be developed at site.
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	**Yes**	Excavation will be carried out for foundation of buildings. The excavated soil will be used in backfilling and other area development activities. (Total Excavated Soil 2,619.155 m^3)
1.9	Underground works including mining or tunneling?	**Yes**	Underground works includes excavation of earth for the foundation of the building only.
1.10	Reclamation works?	**No**	No reclamation work required.
1.11	Dredging?	**No**	No dredging required.
1.12	Offshore structures?	**No**	No offshore structures required.
1.13	Production and manufacturing processes?	**No**	No production/manufacturing process involved as the project is a Hospital project.
1.14	Facilities for storage of goods or materials?	**Yes**	Raw material will be stored at site in a covered area. Cement will be separately stored under cover in bales. Sand will be stacked neatly under tarpaulin cover. Bricks and steel will be laid in open.
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	**Yes**	**Solid Waste:** The solid waste generated from the project will be in the form of:

			<u>Construction Waste:</u> Left over cement and mortars, cement concrete blocks, aggregate, sand and other inorganic material will be recycled and reused as Granular Sub Base (GSB) layer of pavement. Earth rendered surplus from the excavation will be utilized in the embankment works. **<u>Operational Phase:</u>** The solid waste generated from project will be domestic as well as Bio-medical waste in nature and the quantity of the domestic waste generated will be 1,117 kg/day. The STP sludge will be approx. 26 kg/day while there will be a generation of approx. 279 kg/day of Bio-medical waste. Solid wastes generated will be segregated into biodegradable (waste vegetables and foods etc.) and recyclable (papers, cartons, thermocol, plastics, glass etc.) components and collected in separate bins. The biodegradable organic waste will be treated inside the premises to convert it into manure. Recyclable and non-recyclable waste will be disposed through Govt. approved agency.

			Liquid effluents: It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc. The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.
1.16	Facilities for long term housing of operational workers?	**No**	Local laborers will be hired from nearby areas during construction phase. So, there will be no need to create permanent facilities for long-term housing of operational workers.
1.17	New road, rail or sea traffic during construction or operation?	**No**	The site has good connectivity hence no new roads are proposed.
1.18	New road, rail, air waterborne or other transport infrastructure including new	**No**	The project site is well connected through NH-9 which is 2.5 km (S) away

	or altered routes and stations, ports, airports etc?		from project site & NH-91 is 13.5 km towards East direction. The nearest Railway Station is Anand Vihar Railway Station is about 1.5 km (ENE) away from the project site. Indira Gandhi International Airport is 20 km (WSW) from project site.
1.19	Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements?	**No**	Not anticipated.
1.20	New or diverted transmission lines or pipelines?	**No**	There will not be any new/diverted transmission lines or pipelines around the project.
1.21	Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers?	**No**	No impoundment, damming, culver ting, realignment or other changes to the hydrology of surface watercourses is proposed.
1.22	Stream crossings?	**No**	There are no streams running across the site.
1.23	Abstraction or transfers of water form ground or surface waters?	**Yes**	The water supply will be through DJB/private water tankers during construction phase. About 206 KLD of fresh water will be required during operation phase of the project.
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	**Yes**	Runoff will increase due to increased paved surface. However, increased runoff will be managed by well-designed

			Rainwater Harvesting System and storm water management plan.
1.25	Transport of personnel or materials for construction, operation or decommissioning?	**Yes**	During the construction phase, about 15-20 trucks are estimated per week. Adequate parking space nearby the project site for loading and unloading of materials will be provided. Adequate provision will be made for car/vehicle parking at the project site. There shall also be adequate parking provisions for visitors so as not to disturb the traffic and allow smooth movement at the site. For plotted development the parking shall be within the plots by the individual plot owners.
1.26	Long-term dismantling or decommissioning or restoration works?	**No**	No Long term dismantling or decommissioning or restoration works will be involved.
1.27	Ongoing activity during decommissioning which could have an impact on the environment?	**No**	None
1.28	Influx of people to an area in either temporarily or permanently?	**No**	Local laborers from nearby area will be employed during the construction phase. In the operation phase, most of the expected occupants will be from the surrounding areas. Hence, the project will lead to a redistribution of occupants within the city. Thus, no significant influx of people is envisaged.

1.29	Introduction of alien species?	No	The landscaping will be carried out with mainly local species with a few ornamental varieties of flora that are well suited to the local conditions like *Alstonia Scholaris* etc.
1.30	Loss of native species or genetic diversity?	No	There will be no significant impact on the native species or genetic diversity.
1.31	Any other actions?	No	Not Applicable.

2. Use of Natural resources for construction or operation of the Project (such as land, water, materials or energy, especially any resources which are non-renewable or in short supply):

S. No.	**Information/checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
2.1	Land especially undeveloped or agricultural land (ha)	**No**	The project is a developed land.
2.2	Water (expected source & competing users) unit: KLD	**Yes**	During construction phase, approx. 56 ML of water will be required which will be obtained from DJB/Private Water Tanker. During operation phase, water supply will be provided by Delhi Jal Board (DJB).
2.3	Minerals (MT)	**Yes**	Minerals such as sand and aggregates will be required during the construction phase.
2.4	Construction material – stone, aggregates, and / soil (expected source – MT)	**Yes**	All materials for construction will be arranged through select suppliers.
2.5	Forests and timber (source – MT)	**Yes**	All material and timber will be provided by selected suppliers. However steel frames etc shall be used to minimize the

			use of timber.
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	**Yes**	The power is being supplied by TATA POWER-DDL. The total connected load for the project after expansion will be 1,366 kW.
2.7	Any other natural resources (use appropriate standard units)	**No**	Not Applicable

3. Use, storage, transport, handling or production of substances or materials, which could be harmful to human health or the environment or raise concerns about actual or perceived risks to human health.

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	**Yes**	Diesel for DG sets will be stored in drums in earmarked locations. It shall also be handled as per The Manufacture, Storage and Import of Hazardous Chemical Rules, 1989 and Material Safety Data Sheet.
3.2	Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases)	**No**	Suitable drainage and waste management measures (with frequent spray of insecticides etc.) will be adopted in both the construction and operational phase such that there will be no stagnation of water or accumulation of waste. This will effectively restrict the reproduction and

			growth of disease vectors.
3.3	Affect the welfare of people e.g. by changing living conditions?	**Yes**	Socio-economic standard of people will improve due to increased employment opportunities provided by this project. This will lead to better quality of life and will also set a standard for future developments in the area.
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.	**No**	Impacts of this type are not expected.
3.5	Any other causes	**No**	Not Applicable

4. Production of solid wastes during construction or operation or decommissioning (MT/month)

S. No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
4.1	Spoil, overburden or mine wastes	**No**	No such spoil, overburden or mine wastes will be generated.
4.2	Municipal waste (domestic and or commercial wastes)	**Yes**	The total solid waste to be generated is approx. 1,117 kg/day out of which biodegradable waste will be 335.1 kg/day. Bio-medical waste will be approx. 279 kg/d.
4.3	Hazardous wastes (as per Hazardous Waste Management Rules)	**Yes**	The hazardous wastes along with other wastes in the project will be used oil from DG sets, which is classified as per The Hazardous Waste Category 5.1 as

			per The Hazardous Wastes (Management & Handling) Rules, 1989. Used oil from DG sets will be stored in HDPE drums in isolated covered facility. This used oil will be sold to authorized recyclers. Suitable care will be taken so that spills/leaks of used oil from storage are avoided.
4.4	Other industrial process wastes	**No**	Not applicable
4.5	Surplus product	**No**	Not applicable
4.6	Sewage sludge or other sludge from effluent treatment	**Yes**	26 kg/day of Sludge generated from the STP plant will be dried and later will be used as manure for green belt development.
4.7	Construction or demolition wastes	**Yes**	The construction waste will consist of excess earth and construction debris along with cement bags, steel in bits and pieces, insulating and packaging materials etc. Recyclable waste construction materials will be sold to recyclers. Unusable and excess construction debris will be disposed at designated places in tune with the local norms.
4.8	Redundant machinery or equipment	**No**	Redundant machinery will not be generated.
4.9	Contaminated soils or other materials	**No**	Contaminated soils or other materials will not be generated.
4.10	Agricultural wastes	**Yes**	Landscape wastes of 1 kg/day will be

			generated.
4.11	Other solid wastes	**No**	Biomedical waste will be disposed of through a govt approved agency as per norms.

5. Release of pollutants or any hazardous, toxic or noxious substances to air (Kg/hr).

S. No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
5.1	Emissions from combustion of fossil fuels from stationary or mobile sources	**Yes**	The project does not envisage any major air pollution sources except operation of DG sets during power failure and vehicular traffic.
5.2	Emissions from production processes	**No**	No production processes involved. Hence, there will be no such emissions.
5.3	Emissions from materials handling including storage or transport	**Yes**	Small quantities of fugitive emissions are envisaged during transport and handling of construction materials. Such emissions will be temporary and controlled by the use of sprinkling and other viable techniques like covering of loose material.
5.4	Emissions from construction activities including plant and equipment	**Yes**	This will be restricted to the construction phase and the construction site only.
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	**Yes**	Dust is anticipated during loading and unloading of construction material and excavation of upper earth surface. These will however be temporary in nature, which will be controlled by providing

			water sprinklers. Tarpaulin cover will be provided on stored loose materials to reduce the dust emission.
5.6	Emissions from incineration of waste	**No**	No incineration of wastes is proposed.
5.7	Emissions from burning of waste in open air (e.g. slash materials, construction debris)	**No**	Open burning of biomass/other material will be prohibited on site.
5.8	Emissions from any other sources	**No**	Not Applicable

6. Generation of Noise and Vibration, and Emissions of Light and Heat:

S. No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/ rates, wherever possible) with source of information data**
6.1	From operation of equipment e.g. engines, ventilation plant, crushers	**Yes**	Source of noise doing operational phase will be DG sets (which will be used only during power failure), pumps and motors. All the machinery will be of the highest standard and reputed make which will comply with applicable standard. The DG sets will be provided with acoustic enclosure to have minimum 25 dB (A) insertion loss or for meeting the ambient noise standard whichever is on higher side as per E (P) Act, GSR 371 (E) and its amendments. Therefore, no significant impact is anticipated from operation of equipment/machinery.
6.2	From industrial or similar processes	**No**	No industrial processes will be carried out in the project.

6.3	From construction or demolition	**Yes**	Due to various construction activities, there will be short-term noise impacts in the immediate vicinity of the project site. The construction activities will include the following noise generating activities: • Concreting, mixing & operation of DG sets. • Construction plant and heavy vehicle movement.
6.4	From blasting or piling	**No**	No blasting or mechanized piling will be done.
6.5	From construction or operational traffic	**Yes**	Some noise will be generated from vehicular movement in the construction and operational phase but that will be mitigated with green belt.
6.6	From lighting or cooling systems	**No**	No significant noise impact will result from lighting or cooling systems.
6.7	From any other sources	**No**	Not Applicable

7. Risks of contamination of land or water from releases of pollutants into the ground or into sewers, surface waters, groundwater, coastal waters or the sea:

S. No.	**Information/Checklist confirmation**	**Yes/No**	**Details thereof (with approximate quantities/rates, wherever possible) with source of information data**
7.1	From handling, storage, use or spillage of hazardous materials	**No**	The used oil from DG sets will be carefully stored in HDPE drums at isolated storage, and periodically sold to authorized recyclers. All precautions will be taken to avoid spillage from storage as per The Hazardous Wastes

			(Management & Handling) Rules, 2016.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of Discharge)	**No**	There will be no discharge of untreated sewage on land or into water bodies. Adequate treatment of sewage will be carried out in a STP of capacity 205 KL, proposed within the project premises. Treated sewage will be re-used for flushing; landscaping, and HVAC cooling. The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.
7.3	By deposition of pollutants emitted to air into the land or into water	**No**	The DG Set will be provided with stack of adequate height. Hence dispersion will be achieved and avoid deposition of pollutants in significant concentrations at any single location.
7.4	From any other sources	**No**	Not Applicable
7.5	Is there a risk of long term buildup of pollutants in the environment from these sources?	**No**	Not Applicable

8. Risk of accidents during construction or operation of the Project, which could affect human health or the environment

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
8.1	From explosions, spillages, fires, etc. from storage, handling, use or production of hazardous substances	**Yes**	To deal with any fire related accident, firefighting facility of single handed hydrant valve, long hose reel, and portable fire extinguisher shall be provided.
8.2	From any other causes	**No**	Not Applicable
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc.)	**Yes**	The project falls under seismic active Zone IV indicating high damage risk zone. The buildings will be designed as earthquake resistant and comply with the required IS specifications.

9. Factors which should be considered (such as consequential development) which could lead to environmental effects or the potential for cumulative impacts with other existing or planned activities in the locality

S. No.	Information/Checklist confirmation	Yes/No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting. utilities, ancillary development or development stimulated by the project which could	**No**	The project is located in a well developed area with good infrastructure availability.

	have impact on the environment e.g.: • Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) • Housing development • Extractive industries • Supply industries • Other	 **No** **No** **No** **No**	
9.2	Lead to after-use of the site, which could have an impact on the environment	**No**	Not Anticipated
9.3	Set a precedent for later developments	**No**	-
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	**No**	Not Applicable

(III) Environmental Sensitivity

S. No.	**Areas**	**Name/ Identity**	**Aerial distance (within 15 km) Proposed project location boundary**
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	**Jahanpanah City PF**	Approx. 13.5 km, SW

2	Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	**Central Ridge RF** **Northern Ridge RF** **Hindon River** **Yamuna River** **Okhla Bird Sanctuary**	Approx. 9.8 km, W Approx. 9 km, WNW Approx. 8.5 km, E Approx. 3.5 km, W Approx. 8 km, S
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	**Jahanpanah City PF**	Approx. 13.5 km, SW
4	Inland, coastal, marine or underground waters	**Ground water**	The depth of groundwater at project site is 45 meter below the ground level.
5	State, National boundaries	**Delhi- UP State Boundary**	1.5 km (E) from the project site
6	Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas	**NH-9** **NH-91**	2.5 km (S) away from the project site. 13.5 km (E) away from the project site
7	Defense installations	**Hindon Air Force Station**	8 km NE away from the project site.
8	Densely populated or built-up area	**Preet Vihar**	1 km, E away from the project site.
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*	**DAV Public School** **Dayanand Vihar** **Arunodya Public School**	0.3 km (E) from the project site 0.2 km (W) from the project site

		Vivekananda College **Gufa Wala Mandir** **Durga Mandir** **Amar Jyoti Charitable Trust**	3 km (NE) from the project site 0.5 km (SSW) from the project site 1 km (SW) from the project site 0.5 km (N) from the project site
10	Areas containing important, high quality or scarce resources. *(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*	**Ground Water**	The depth of groundwater at project site is 45 meter below the ground level.
11	Areas already subjected to pollution or environmental damage *(those where existing legal environmental standards are exceeded)*	**River Ymauna**	Approx. 3.5 km, W
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (*earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions*)	**Earthquakes**	The site falls under the **zone IV** as per the Seismic Zone Map of India and is thus prone to high damage risk zone. Adequate measures will be taken during the construction of the project.

(IV) Terms of Reference for EIA studies: Not Applicable for 8 (a) category of Construction Project

"I hereby give undertaking that the data and information given in the application and enclosures are true to the best of my knowledge and belief and I am aware that if any part of the data and information submitted is found to be false or misleading at any stage, the project will be rejected and clearance given, if any to the project will be at our risk and cost.

Date: 06.03.2020
Place:

06.03.2020

O.P. Gupta
Founder Member & Managing Trustee
Applicant

O. P. GUPTA
Founder Member Shri Mukandi Lal Memorial
Foundation For Heart & Medical Care
Shanti Mukand Charitable Hospital
Karkardooma, Delhi-110092

NOTE:

1. The Projects involving clearance under Coastal Regulation Zone Notification, 1991 shall submit with the application a C.R.Z map duly demarcated by one of the authorized agencies, showing the project activities, w.r.t. C.R.Z. and the recommendations of the state Coastal Zone management Authority. Simultaneous action shall also be taken to obtain the requisite clearance under the provisions of the C.R.Z. Notification, 1991 for the activities to be located in the CRZ.
2. The projects to be located within 10 km of the National Parks, Sanctuaries, Biosphere Reserves, Migratory Corridors of Wild Animals, the project proponent shall submit the map duly authenticated by Chief Wildlife Warden showing these features vis-à-vis the project location and the recommendations or comments of the Chief Wildlife Warden thereon."
3. All correspondence with the Ministry of Environment & Forests including submission of application for TOR/ Environmental Clearance, subsequent clarifications, as may be required from time to time, participation in the EAC Meeting on behalf of the project proponent shall be made by the authorized signatory only. The authorized signatory should also submit a document in support of his claim of being an authorized signatory for the specific project".

FORM IA

w.r.t.

EXPANISON OF SHANTI MUKAND HOSPITAL

At

2, INSTITUTIONAL AREA, VIKAS MARG EXTENSION, KARKARDOOMA, DELHI

For

SHRI MUKANDILAL MEMORIAL FOUNDATION FOR HEART & MEDICAL CARE

May, 2020

Schedule: 8(a), Category: B
Built Up Area – **27,862.512** m^2

QCI Certificate no. NABET/EIA/1821/SA 0110

PREPARED BY

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FORM IA

CHECK LIST OF ENVIRONMENTAL IMPACTS

SECTION 1- LAND ENVIRONMENT

1.1 Will the existing land use get significantly altered from the project that is consistent with the surroundings? (Proposed land use must conform to the approved Master Plan/Development Plan of the area. Change of land use, if any and the statutory approval from the competent authority are 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.

- **No**

Since it is expansion of an existing Hospital building, there will be no change in landuse of site. The site is located at 2, Institutional Area, Vikas Marg Extension, Karkardooma, Delhi and development of project is in accordance with the Master Plan of Delhi.

It is anticipated that the construction activities of the project will not have an adverse effect on the land use activities in the project area. The development of green belt and other landscaping will enhance the visual aesthetics of the area. The geographical co-ordinates of project site are 28°38'43.88"N and 77°18'07"E. The Nearest Highway is NH-9 which is 2.5 km (S) away from project site & NH-91 is 13.5 km towards East direction. The nearest Railway Station is Anand Vihar Railway Station is about 1.5 km (ENE) away from the project site. Indira Gandhi International Airport is 20 km (WSW) from project site.

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 REQUIREMENT

The total area of project site is 6,852.64 m^2 (1.69 acres). The detailed area statement along with brief details of the project is provided below in **Table 1:**

Table 1: Detailed Area Statement

S. No.	Particulars	Existing (m^2)	Expansion (m^2)	Total (m^2)
1.	**Total Plot area**	**6,852.64**	**-**	**6,852.64**
2.	Permissible ground coverage (@40% of Total Plot area)	2741.06		
3.	**Proposed ground coverage (@35.20 % of Total Plot area)**	**1,663.612**	**748.33**	**2,411.94**
4.	Permissible FAR @ 3.75	25,697.4		
5.	**Proposed FAR @ 2.78**	**8,276.064**	**10,795.22**	**19,071.284**
6.	**Total NON-FAR Area**	**670.958**	**8,120.270**	**8,791.228**
7.	**Total Built up area (5+6)**	**8,947.022**	**18,915.490**	**27,862.512**
8.	Proposed Landscape Area (@23.12% of Total Plot Area)	1,584.59 sqm		
9.	Number of Beds	200	200	400
10.	Maximum height of the building (m)	39.3		

- **WATER REQUIREMENT**

The total (existing + expansion) water requirement for the project will be approx. 464 KLD. The water supply is being provided by Delhi Jal Board (DJB). The fresh water requirement will be approx. 206 KLD post expansion.

- **POWER REQUIREMENT**

The power is being supplied by TATA POWER-DDL. The total connected load for the project after expansion will be 1,366 kW.

- **CONNECTIVITY**

The Nearest Highway is NH-9 which is 2.5 km (S) away from project site & NH-91 is 13.5 km towards East direction. The nearest Railway Station is Anand Vihar Railway Station is about 1.5 km (ENE) away from the project site. Indira Gandhi International Airport is 20 km (WSW) from project site.

- **PARKING FACILITIES**

Adequate provision will be made for car/vehicle parking at the project site. The total parking provided for the project will be 327 ECS.

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 land use and disturbance to the local ecology).

The project being a well planned activity will result in organized open spaces and green areas. Total green area measures 1,584.59 m^2 i.e. 23.12 % of the total plot area (Shelter belt, Avenue plantation and lawn) of project site. The biodiversity in the area will increase due to the proposed green areas. The project will have an overall positive impact on the existing land use and will not cause any disturbance to the local ecology. Proposed activity shall have no impact on surroundings.

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

There shall be no land disturbance resulting in erosion, subsidence and instability as it is a vacant land. The site falls under the zone IV as per the seismic zone map of India and indicating High damage risk zone. The project will be earthquake resistant taking into account the latest provisions of Indian Standards Codes.

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

The project will not intersect any natural drainage route. Urbanized stretch and well planned storm water drainage will be designed for internal storm water drainage. Thus, no impact on the natural drainage system is anticipated.

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?)

The earthwork included soil excavation and cutting of the earth will be moved. The cut and fill material in the project site is nearly at par and hence the need for movement of soil to and from the site will not be anticipated. Total amount of the soil excavated for construction is 2,619.155 m^3.

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

It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc.

The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.

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).

No. The site area is a flat land and the surroundings are characterized by an urbanized stretch. No low lying areas or wetlands are found in the region.

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

No health hazards are expected during the construction phase. The laborers will be provided with face masks to minimize dust inhalation.

A significant portion of the construction waste and wood scrap generated will be used on the site. The quantity of domestic waste generated was very little, as mostly local laborers will be employed. However, the wastes generated will be collected and disposed by an authorized agency.

SECTION 2- WATER ENVIRONMENT

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

The total (existing + expansion) water requirement for the project will be approx. 464 KLD. The water supply is being provided by Delhi Jal Board (DJB). The fresh water requirement will be approx. 206 KLD post expansion. Daily water requirement calculation is given below in Table 2 to 5:

Table 2: Calculations for Daily Water Demand (Existing)

S. No.	Description	Occupancy	Rate of water demand (lpcd)	Total Water Requirement (KLD)
A.	**Domestic water**			
	Inpatients/Beds	200	450	90
	OPD patients	200	15	3
	Staff (Doctors + Nurses)	657	45	29.65
	Inpatient attendants	260	15	3.9
Sub-Total (A) = 130.45 say 130 KLD				
B.	**Horticulture** (1,584.59 sqm)	6 l/sqm		10 KLD
C.	**Kitchen & Laundary Usage**	38 KLD		
Grand total (A+B+C)				**178 KLD**

Table 3: Calculations for Daily Water Demand (Expansion)

S. No.	Description	Occupancy	Rate of water demand (lpcd)	Total Water Requirement (KLD)
A.	**Domestic water**			
	Inpatients/Beds	200	450	90
	OPD patients	800	15	12
	Staff (Doctors + Nurses)	657	45	29.65
	Inpatient attendants	560	15	8.4
Sub-Total (A) = 140.05 say 140 KLD				
B,	**Kitchen & Laundary Usage**	38 KLD		
C.	**HVAC Cooling**	150 KLD		
Grand total (A+B+C)				**188 KLD**

Table 4: Calculations for Total Daily Water Demand (Existing + Expansion)

S. No.	Description	Occupancy	Rate of water demand (lpcd)	Total Water Requirement (KLD)
A.	**Domestic water**			
	Inpatients/Beds	400	450	180
	OPD patients	1000	15	15
	Staff (Doctors + Nurses)	1314	45	59.13

	Inpatient attendants	820	15	12.3
Sub-Total (A) = 266.43 say 266 KLD				
B.	**Horticulture (**1,584.59 m^2)	6 l/sqm		10
C.	**HVAC cooling**	150 KLD		
D.	**Kitchen & Laundary Usage**	38 KLD		
Grand total (A+B+C+D)				**464 KLD**

Table 5 (a): Total Wastewater Calculations w.r.t. ETP

S. No.	Description	Quantity (KLD)
1.	Fresh and flushing water requirement for the hospital including:	**67 KLD**
	• IPD (@5% of total IPD water requirement)	9 KLD
	OPD (@10% of total OPD water requirement)	2 KLD
	OT, Blood Bank, Lab	18 KLD
	Laundry	38 KLD

2.	Wastewater going to ETP @ 80% of (9 + 1.5 KLD) and 100% of 56 KLD	8.4 + 56 = 64.4 **say 64 KLD**
3.	ETP Capacity	**80 KL**

Table 5 (b): Total Wastewater Calculations w.r.t. STP

S. No.	Description	Quantity (KLD)
1.	Fresh water requirement for the hospital (excluding IPD. OPD, OT, Blood Bank, Lab & Laundry) @ 70% of (266 – 67 = 199 KLD)	139
2.	Flushing water requirement (excluding IPD, OPD, OT, Blood Bank & Lab) @ 30% of (266 – 67 = 199 KLD)	60
3.	Wastewater going to STP @ 80% of 139 KLD + 100% of 60 KLD	111.2 + 60 = 171.2 say **171 KLD**
4.	STP Capacity	205 KL

The water balance diagrams for different seasons are shown below:

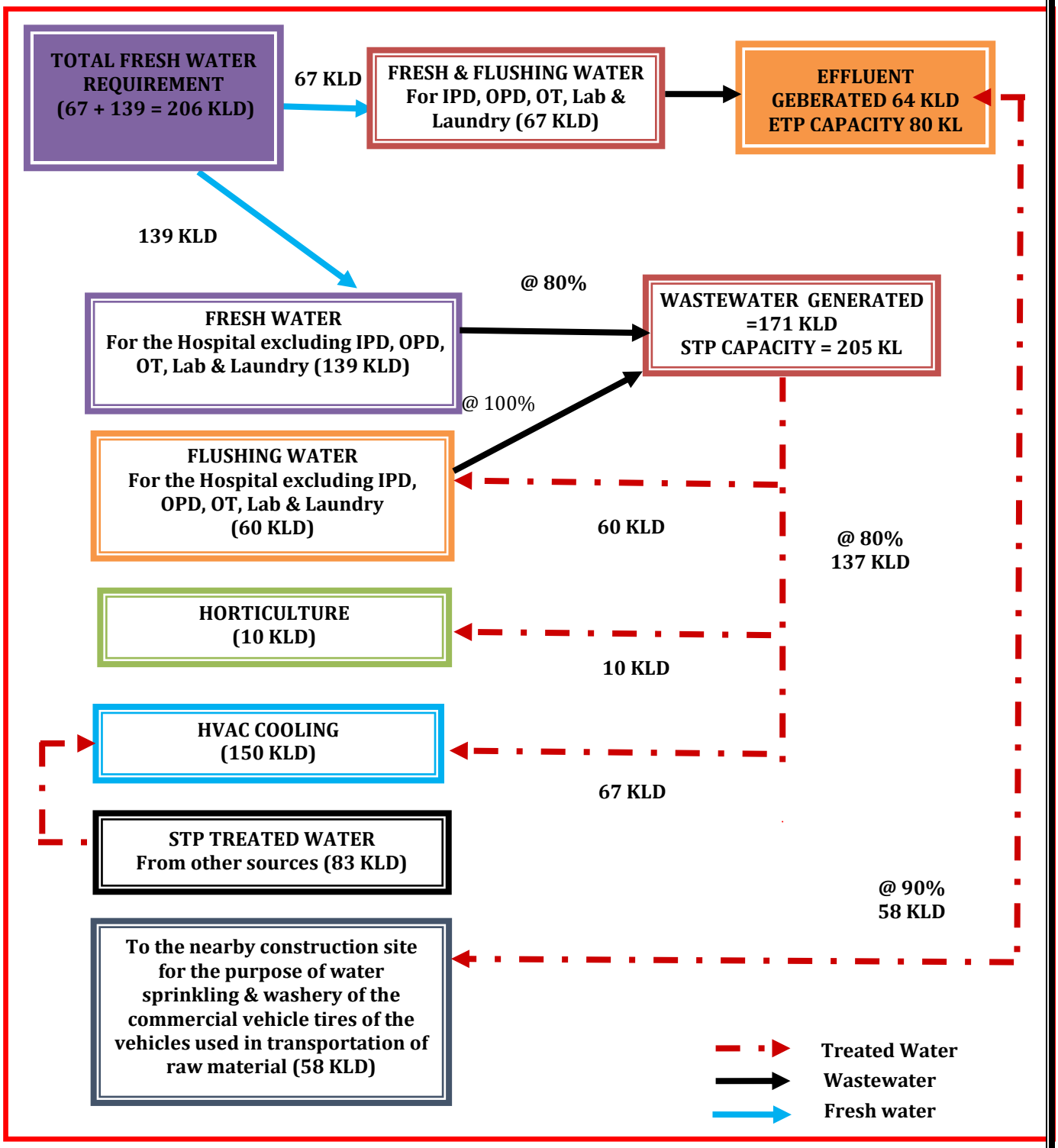

Figure 1: <u>Water Balance Diagram</u> (Non Rainy Season)

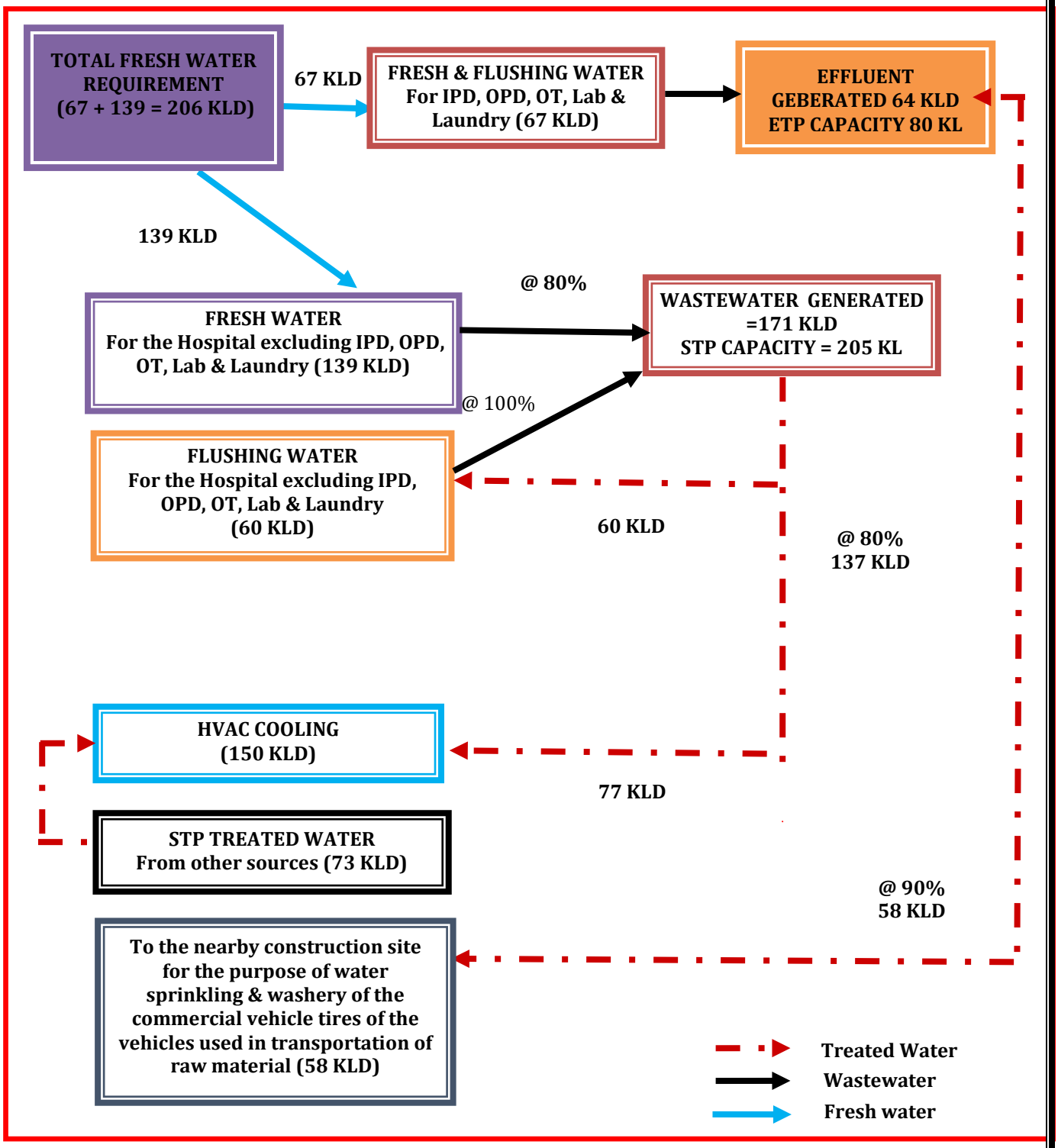

Figure 2: Water Balance Diagram (Rainy Season)

Waste Water/Effluent Generation & Treatment

It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc.

The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.

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

The total (existing + expansion) water requirement for the project will be approx. 464 KLD. The water supply is being provided by Delhi Jal Board (DJB). The fresh water requirement will be approx. 206 KLD post expansion.

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).

The total (existing + expansion) water requirement for the project will be approx. 464 KLD. The water supply is being provided by Delhi Jal Board (DJB). The fresh water requirement will be approx. 206 KLD post expansion. The quality of water conforms to the desirable drinking water standards as per IS: 10500.

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

It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc.

The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the

total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.

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. Rise in water demand is a local phenomenon but the project would only involve spatial shifting of water demand within a region.

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)

It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc.

The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.

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

The storm water collection system for the premises shall be self-sufficient to avoid any collection/stagnation and flooding of water. The amount of storm water run-off depends upon many factors such as intensity and duration of precipitation, characteristics of the tributary area and the time required for such flow to reach the drains. The drains shall be located near the carriage way along either side of the roads. Taking the advantage of road camber, the rainfall run off from roads shall flow towards the drains. Storm water from various plots/shall be connected to adjacent drain by a pipe through catch basins. Therefore, it has been calculated to provide 02

rainwater harvesting pits at selected locations, which will catch the maximum run-off from the site.

1) Since the existing topography is congenial to surface disposal, a network of storm water pipe drains is planned adjacent to roads. All building roof water will be brought down through rain water pipes.
2) Proposed storm water system consists of pipe drain, catch basins and seepage pits at regular intervals for rain water harvesting and ground water recharging.
3) The peak hourly rainfall of 45 mm/hr shall be considered for designing the storm water drainage system.

Rain water harvesting has been catered to and designed as per the guideline of CGWA. Peak hourly rainfall has been considered as 45 mm/hr. The recharge pit of 3 m diameter and 3.5 m depth is constructed for recharging the water. Inside the recharge pit, a recharge bore is constructed having adequate diameter and depth. The bottom of the recharge structure will be kept 5 m above this level. At the bottom of the recharge well, a filter media is provided to avoid choking of the recharge bore. Design specifications of the rain water harvesting plan are as follows:

- Catchments/roofs would be accessible for regular cleaning.
- The roof will have smooth, hard and dense surface which is less likely to be damaged allowing release of material into the water. Roof painting has been avoided since most paints contain toxic substances and may peel off.
- All gutter ends will be fitted with a wire mesh screen and a first flush device would be installed. Most of the debris carried by the water from the rooftop like leaves, plastic bags and paper pieces will get arrested by the mesh at the terrace outlet and to prevent contamination by ensuring that the runoff from the first 15 minutes of rainfall is flushed off.
- No sewage or wastewater would be admitted into the system.
- No wastewater from areas likely to have oil, grease, or other pollutants has been connected to the system.

Calculations for storm water load:

Plot Area = 6,852.64 m^2

Roof-top area = Ground Coverage = 2,411.94 m^2

Green Area = 1,584.59 m^2

Paved Area = Total Plot Area – (Ground Coverage + Green Area)

= 6,852.64 – (2,411.94 + 1,584.59)

= 2,856.11 m^2

Run-off Load.

Roof-top Area = 2,411.94 x 0.045 x 0.9

= 97.68 m^3/hr.

Green Area = 1,584.59 × 0.045 × 0.2

= 14.26 m^3/hr.

Paved Area = 2,856.11 × 0.045 × 0.7

= 89.96 m^3/hr.

Total Runoff Load = 97.68 + 14.26 + 89.96

= 201.9 m^3/hr.

Taking 15 minutes retention time, volume of storm water = 201.9/4 = 50.47 m^3

Capacity of Recharge pit = $\pi r^2 h$ = 3.14 × 1.5 × 1.5 × 3.5 = 24.72 m^3

Hence No. of pits required = 50.47/24.72 = **2.04** pits say **2** Pits

Total of 2 Rain Water Harvesting pits are proposed for artificial ground water recharge.

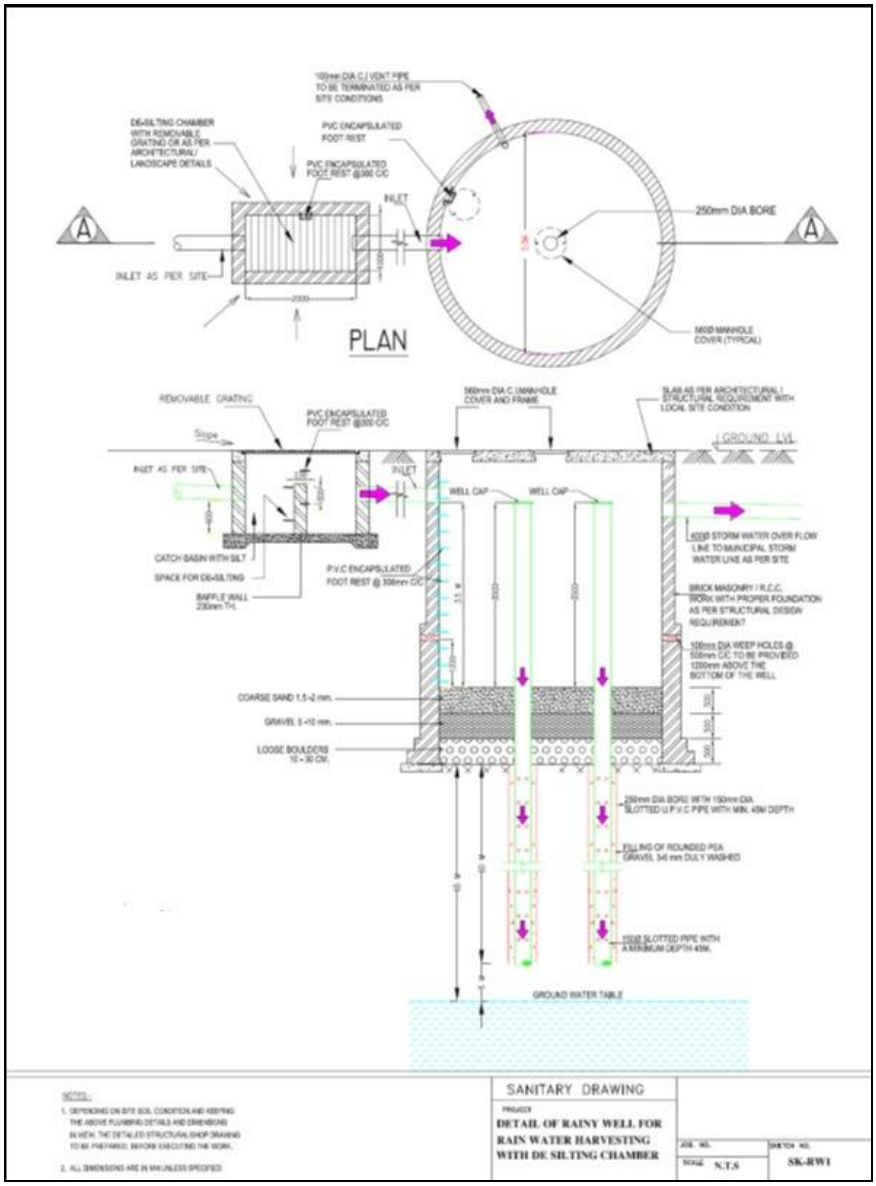

Figure 1: Rain Water Harvesting Pit.

2.8 What would be the impact of the land use changes occurring due to the 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 project will include paved areas and thus the runoff from the plot is expected to increase due to reduced infiltration. However, the increased runoff will not cause flooding or water logging as a well designed storm water drainage will be provided. The runoff will finally be collected into

rainwater harvesting pits for groundwater recharging. The quality of the runoff is expected to improve due to paved areas.

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).

Project will not use ground water during construction and operation phase; however rain water recharge pit will improve the ground water table so overall impact on ground water will be positive.

2.10 What precautions/ measures have been proposed to check the surface run-off, as well as uncontrolled flow of water into any water body?

The following management measures are suggested to protect the water quality during construction phase.

- Care would be taken to avoid soil erosion.
- Community toilets shall be constructed on the site during construction phase and the wastewater will be channelized to the septic tank in order to prevent wastewater from entering the water bodies.
- Any area with loose debris within the site shall be planted.
- To prevent surface and ground water contamination by oil/grease, leak proof containers would be used for storage and transportation of oil/grease. The floors of oil/grease handling area would be kept effectively impervious.
- Collection and settling of storm water, prohibition of equipment wash downs, and prevention of soil loss and toxic release from the construction site will be adhered to minimize water pollution.

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).

Most of the storm water produced on site will be harvested for ground water recharge. Thus proper management of this resource is a must to ensure that it is free of contamination. A detailed

Storm Water Management Plan will be developed which will consider the sources of storm water. The plan will incorporate best management practices which will include the following:

- Regular inspection and cleaning of storm drains.
- Installation of clarifiers or Oil/Water separators system of adequate capacity around parking areas and garages as per requirement.
- Cover waste storage areas.
- Avoid application of pesticides and herbicides before wet season.
- Conducting routine inspections to ensure cleanliness.
- Preparation of spill response plans, particularly for fuel and oil storage areas.
- Good housekeeping in the above areas.

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

No, mostly local laborers will be employed during the construction phase and thus negligible quantities of wastes will be generated. Mobile toilets will be provided and the waste water generated will be collected in septic tanks.

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).

It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc.

The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.

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

Dual plumbing system that utilizes separate piping systems for freshwater and recycled sullage will be adopted for the project. The recycled water system shall utilize this treated sullage and serve for non-contact uses such as flushing, HVAC and horticulture.

3. 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).

No ecologically sensitive area falls within the project site. Hence, no ecological/ biological threat will be anticipated.

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

14 trees will require cutting/ removal out of which 2 trees will be transplanted. Besides, approx. 40 smaller plants/ trees, would be transplanted at existing site in proposed green areas and along plot boundary. It is to develop a peripheral greenbelt of native plant species to enhance the aesthetic value of the region and also provide an excellent habitat for various faunal groups. Evergreen tall and ornamental trees like *Cassia Fistula, Delonix regia, &* the Shrubs like *Bauhinia purpurea, B. variegata etc.* have been proposed to be planted inside the premises.

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?)

Green belt will be developed along the periphery of the project premises along with the internal parks and lawns. The project being a well planned activity will result in organized open spaces and green areas. Total green area measures 1,584.59 m^2 i.e. 23.12 % of the total plot area (Shelter belt, Avenue plantation and lawn) of project site.

4. 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. The existing land use around the site is urban and does not provide a habitat for wild species. A few species of butterfly, avifauna and reptiles were recorded during the course of survey, which are common and found abundantly in this region. The proposed peripheral greenbelt will provide an excellent habitat for the native fauna.

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

The project will not have any direct or indirect impacts on the avifauna of the area. However, planting of fruit bearing trees in the proposed greenbelt will be an attraction to the local bird population.

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

Not applicable.

5. 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 construction).

Ambient air monitoring will be carried out at the project site during the environmental assessment.

Vehicular emissions will be major source of air pollution in addition to DG set. Quantum and dispersion of pollutants form vehicular emission will depend upon the following:

- Volume of traffic on the roads,
- Meteorological conditions.
- Emission sources from D.G. Sets.

From vehicular emissions, PM, NO_2 and CO are pollutants of primary concern. The dispersion of vehicular emissions would be confined within 100 m from the road and concentration will decrease with the increase in distance from road. It is anticipated that the contribution of vehicular emissions in ambient air quality will be marginal but well within the stipulated National Ambient. At higher wind speed dispersion will be faster.

Air Environment

Impact: Vehicular emissions will be major source of air pollution in addition to DG set. Quantum and dispersion of pollutants form vehicular emission will depend upon the following:

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Air Quality Modeling:

The only source of emissions from the project is the operation of backup generator during grid power failure. Detailed air quality modeling has been carried out for predicting the concentration of different pollutants contributed by the project during operation of the backup generators.

Air Environment

Impact: Vehicular emissions will be major source of air pollution in addition to DG set. Quantum and dispersion of pollutants form vehicular emission will depend upon the following:

- Volume of traffic on the roads,
- Meteorological conditions.
- Emission sources from D.G. Sets.

From vehicular emissions, PM, NO_x and CO are pollutants of primary concern. The dispersion of vehicular emissions would be confined within 100 m from the road and concentration will decrease with the increase in distance from road. It is anticipated that the contribution of vehicular emissions in ambient air quality will be marginal but well within the stipulated National Ambient. At higher wind speed dispersion will be faster.

Mitigation Measures: It is proposed to develop a green belt inside the premises of the project site and along the internal roads, which will work as barrier for the movement of pollutants and help in pollution control.

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.

Source of pollution:-

As per dispersion modeling of pollutants from DG set, predicted resultant GLC for various air pollutants are found insignificant within the NAAQS norms.

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 and exit to the project site.

Adequate provision will be made for car/vehicle parking at the project site. There shall also be adequate parking provisions for visitors so as not to disturb the traffic and allow smooth movement at the site.

PARKING REQUIRED -

As per MoEFCC Norms:

1.) For Hospital Block = 1 ECS / 2 beds

= 400/2

= 100 ECS

Total parking required as per MoEFCC norms = **100 ECS**

As per DDA Bye-laws:

1.) For Hospital Block (Existing) = 1.33 ECS / 100 m2 FAR

= 8,276.064/100 x 1.33

= 110 ECS

2.) For Hospital Block (Proposed) = 2 ECS/100 m2 FAR

= 10,795.22/100 x 2

= 216 ECS

Total parking required as per DDA bye laws = **326 ECS**

PARKING PROPOSED –

PARKING CALCULATION	**TOTAL AREA (SQ.M)**	**ECS ACHIEVED**
BASEMENT 2 (2 STACK Automated PARKING) (AREA/32*2)	1371.47	86 ECS
BASEMENT 3 (3 STACK Automated PARKING) (AREA/32*3)	1452.28	136 ECS
SURFACE PARKING (AREA/23)	1238	54 ECS
Automatic parking system (2 blocks)		51 ECS
TOTAL NO. OF ACHIEVED PARKING		**327**

Total parking provided **= 327 ECS**

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

This is expansion of an existing hospital building. No additional roads/footpaths are proposed for Expansion part as it is a well-developed site.

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.

Significant impact of noise has been carried out within and outside of the project site. Noise, due to the traffic, within site, will result in a marginal increase in the noise levels because noise control measures shall be provided in vehicles & DG sets as mentioned below, which will cause slight increase in noise level.

5.6 What will be the impact of D.G. set and other equipment on noise levels and vibration in ambient air quality around the project site? Provide details.

During operation, vehicular movement and operation of DG set are the major sources of noise pollution. But both these activities- DG set and vehicular movement will not have any significant impact on the people residing in the area. Since DG set will not be operational continuously and moreover it will be placed away from residential settlements and will be enclosed with suitable enclosures, hence no or minimal impact will be anticipated. It is envisaged that the movement of the motor vehicles will be restricted to designated carriageways only.

Impacts on Air Quality due to DG Set:

- Impacts on ambient air during operation phase would be due to emissions from the stacks attached to backup DG set only during grid power failure.

Mitigation Measures for Impacts of DG Set on Ambient Air Quality:

- Back up DG set will comply with the applicable emission norms.
- Adequate stack height for DG set will be provided as per norms.
- Back up DG set will be used only during power failure.
- Monitoring of emissions from DG set and ambient air quality will be carried out as per norms.

Noise Control Measures for DG set:

- DG room will be provided to insure 75 dB (A) insertion loss as per the regulations.
- Adequate exhaust mufflers will be provided as per norms to limit the noise.

6. AESTHETICS

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

The site lies in an urbanized settlement and is well planned. Thus, no obstruction of view or scenic beauty or landscape is anticipated. Furthermore, the construction will be planned in such a way that the organized open spaces and landscaped areas will render the plot aesthetically appealing.

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

No impacts anticipated.

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

The project will strictly follow the Area Building Regulation of NBC. All norms on Ground Coverage, FAR, Height, Setbacks, Fire Safety Requirements, Structural Design and other parameters will be strictly adhered to.

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

No anthropological or archaeological sites or artifacts will be found near the site area.

7. SOCIO-ECONOMIC ASPECTS

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

No such changes anticipated.

Construction phase: Since local labourers will be engaged during construction phase, alteration to the existing demographic profile of the area is not anticipated.

Operation phase: The changing demography in the area is another impact that needs attention. The project will mainly lead to spatial redistribution of local population and hence no considerable influx of population is envisaged owing to the project.

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

DAV Public School Dayanand Vihar	0.3 km (E) from the project site
Arunodya Public School	0.2 km (W) from the project site

Vivekananda College	3 km (NE) from the project site
Gufa Wala Mandir	0.5 km (SSW) from the project site
Durga Mandir	1 km (SW) from the project site
Amar Jyoti Charitable Trust	0.5 km (N) from the project site

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

Construction phase: There are no religious sites or archeological monuments of historical significance on the project site. Hence, no adverse impact in this regard is anticipated. Rather, this phase will generate jobs that relate to unskilled, semi skilled as well as skilled labour category. Few supervisory positions will also open up, for which local candidates will be considered based on merit.

Operation phase: The project will provide goods storage facility in the area, thereby provide the jobs opportunity. A project of such scale will also boost the local economy.

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)

In order to reduce the embodied energy, it is proposed to use following energy efficient construction material:

- Fly ash bricks
- PPC (Fly ash based cement)

PPC can contain up-to 37% fly ash as per BIS Norms

Conventionally, 1kg of cement production releases 900gm of CO_2 in the atmosphere. Thus use of PPC helps to reduce CO_2 emission.

On the other hand, conventional bricks create smoke and use high energy.

Following are the advantages of using fly ash as a construction material:

- The fly ash bricks are lighter in weight by 10 per cent compared to clay bricks, hence reduce load of the building.
- Fly ash bricks absorb less water compared to clay bricks (10 to 12 per cent as against to 15 to 20).
- Fly ash bricks are stronger and less susceptible to scratches/breakage. Thus they can be used for courtyards, pathways and are most suitable for footpaths.

Since PPC consume fly-ash produced from thermal power plant. It is therefore environment friendly.

Additionally fly-ash as based cement (PPC) requires less water for curing.

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

Mitigation Measures for Air Pollution during Construction Stage:

- Construction materials will be suitably covered with tarpaulin cover etc during transportation.
- Water sprinkling shall be done on haul roads where dust generation is anticipated.
- Raw material storage and handling yard will be enclosed from all sides.
- To minimize the occupational health hazard, proper personal protective gears i.e. mask shall be provided to the workers working in the dust prone areas.

Mitigation Measures for Noise Pollution during Construction Stage:

- Administrative as well as engineering control of noise will be implemented.
- Isolation of noise generation sources and temporal differentiation of noise generating activities will ensure minimum noise at receiver's end.
- To prevent any occupational hazard, earmuff / earplug shall be given to the workers working around construction plant & machinery emitting high noise levels.
- Use of such plant or machinery shall not be allowed during night time. Careful planning of machinery operation and scheduling of operations shall be done to minimise such impact.

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

As per the Fly Ash Notification 14th September 1999 and its amendments, we will be using Fly Ash based bricks for construction purpose at project site to the maximum level. We would utilize fly ash based bricks/Pavement tiles to the maximum extent possible.

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

The solid waste of the project will be segregated into biodegradable waste and non-biodegradable. Biodegradable waste and non-biodegradable waste will be collected in separate coloured bins. The recyclable wastes will be sent off to recyclabers.

Biomedical waste is being managed through an approved bio-medical waste management agency.

Collection and Segregation of Waste

For Hospital waste collection, adequate numbers of colored bins (Red, Yellow, Black, Blue and dark blue bins) are proposed to be provided at the strategic locations of the Hospital area.

Red bins: For the disposal of IV tubings, plastic bottles, syringes without needles, drainage tubes, catheters, locally autoclaved microbiological waste.

Yellow bins: For the disposal of anatomical parts, amputated body parts, placenta. Items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines, bedding, other material contaminated with blood.

Black bins: For the discard of paper, wrappers, tissue and other general items.

Blue bins: For the disposal of glass bottles, ampoules, broken glass, vials, other glass items.

Dark Blue bins: For the disposal of sharps. Does not contain disinfectant. Includes needles, stillet, lancets and blades.

- **Treatment of Waste**

➢ Biodegradable Waste

Bio-degradable waste will be treated onsite through an approved Vendor in accordance with the Bio-Medical Waste (Management and Handling) Rules, 2016.

➢ Recyclable waste

Grass Recycling The cropped grass will be spread on the green area. It will act as manure after decomposition.

Recyclable wastes like paper, plastic, metals etc. will be sold off to recyclers.

- **Disposal**

Recyclable and non-recyclable waste will be disposed through Govt. approved agency.

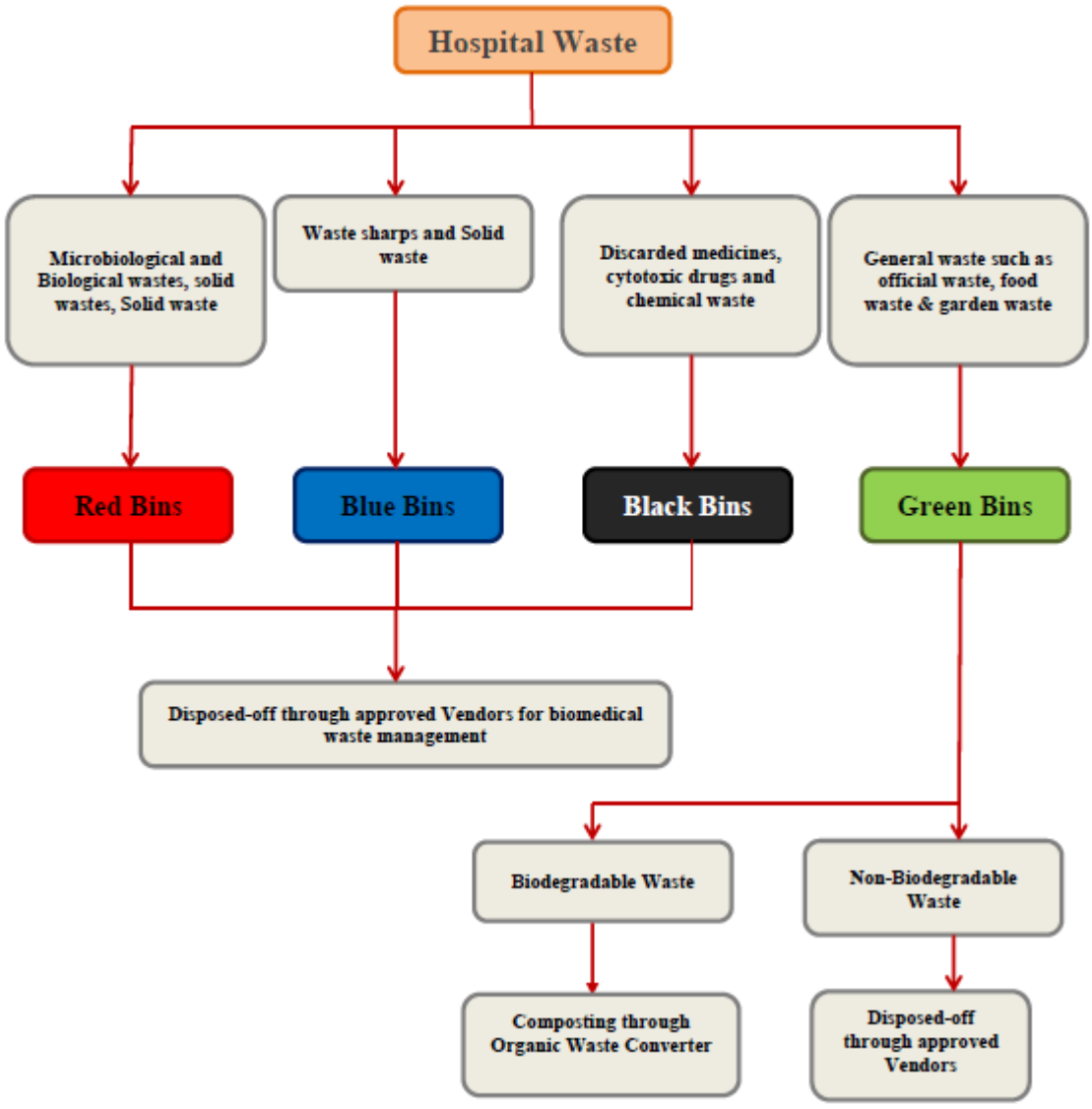


Figure 2: Solid Waste Management Scheme (Operation Phase)

9. ENERGY CONSERVATION

9.1 Give details of the power requirements, source and 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?

The power is being supplied by TATA POWER-DDL. The total connected load for the project after expansion will be 1,366 kW.

Effective measures have been incorporated to minimize the energy consumption in following manners:

- Followed Provisions of ECBC-2017 for Super ECBC Buildings
- Efficient Transformers.
- Power Factor 0.99
- Energy Efficient Motors (IE-3/IE-4)
- Air-Conditioning with Conventional water cooled chillers, Efficiency as per ECBC-2017,
- Efficient Chillers with VFDs in Pumps, AHUs and cooling Towers.
- Heat Recovery Units for fresh air intake.
- All Lighting fixtures - high efficacy LED
- All external Lighting fixtures - high efficacy LED
- Lighting Control with sensors.
- Building Management System to control HVAC and other electro-mechanical systems to minimize power consumption.

9.2 What type and capacity of power backup do you plan to provide?

There will be provision of 3 DG sets of total capacity (2 x 1250 + 1 x 500 KVA) with 3,000 KVA for power back up. The DG sets will be equipped with acoustic enclosure to minimize noise generation and adequate stack height for proper dispersion.

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?

The proposed project will involve uses of clear & tinted glass having U-value approx. 2.67 to 3.97 W/m2K.

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

Passive solar design refers to use of the sun's energy for the heating and cooling of living spaces. 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.

9.5 Does the layout of street & building 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.

Solar energy will be utilized for street lighting, solar blinkers and signages to reduce electricity consumption.

9.6 Is the shading effectively used to reduce cooling/heating lands? 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?

Shading by Overhangs, Louvers and Awnings:

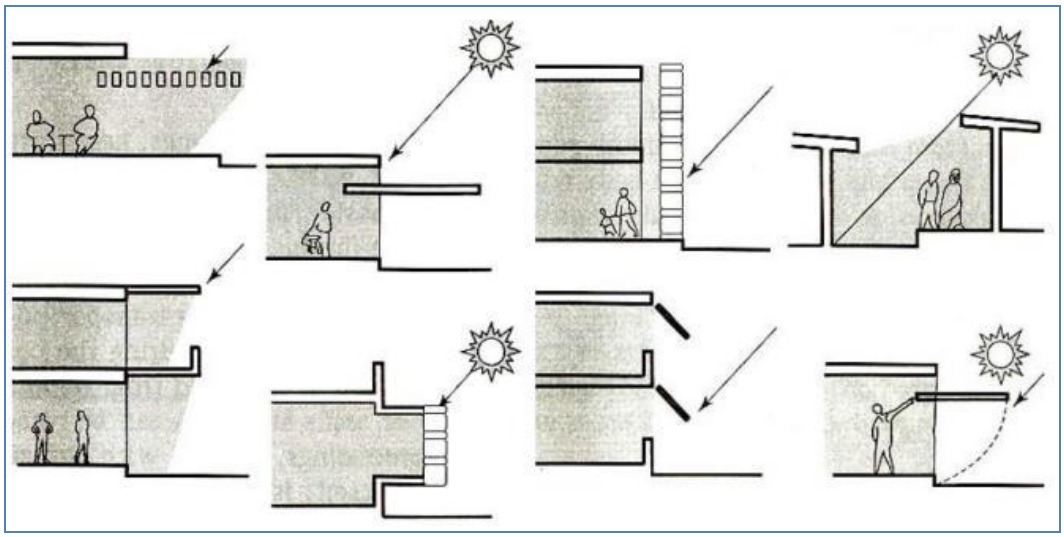
Well-designed sun control and shading devices are proposed to reduce building peak heat gain and cooling requirements and improve the natural lighting quality of building interiors (Please refer figure below).

The design of shading devices will include simple fixed overhangs which are very effective at shading south-facing windows in the summer when sun angles are high.

The other shading devices which will be explored are as given below:

1) Movable opaque: Roller blind curtains, awnings etc. reduce solar gains but impede air movement and cut the view.

2) Louvers: They are adjustable or can be fixed. To a certain extent impede air movement and provide shade to the building from the solar radiation.



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

Yes, the walls and rooms will be insulated such that air conditioning load is reduced. Measures will be adopted to reduce the heat influx by walls, roofs and openings. Only prescribed quality of glasses will be used.

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

Heat emissions from the construction may be from the following sources:

- Heat absorbed from the paved and concrete structures
- Heat generated from equipment/appliances
- Heat increase due to population increase in the project.

However, the heat generated will not be significant and will be dissipated in the greens and open areas provided within the project area.

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 value or the R values of the individual components.

The roof tops of the buildings will be planned with puffing/bricks bat coba for water proofing and reflective tiles. External wall-external opening will have regular door windows with slightly tinted glass. Regular walls have some cladding/fixture paints.

S. No.	Component	U-value (W/m^2-°C)	R-value (m^2-^{0}C/W
(a)	Roof	< 0.409	R-2.1
(b)	External wall	< 0.352	R-2.35

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

Firefighting measures will be adopted as per the guidelines of NBC. External yard hydrants shall be installed around all buildings in the complex in galvanized steel fire house cabinet (weather proof). All external yard hydrants shall be at one meter height from finished ground level as per NBC at a distance of 60 m along the road. External fire hydrants shall be located such that no portion of any building is more than 45 m from a hydrant and the external hydrants are not vulnerable to mechanical or vehicular damage.

Fire hydrant system will be provided within the buildings, fire escape staircases and refuge areas will be provided and the building structures will be planned as per NBC, 2016. In addition, 10 kg fire extinguishers will be provided for class A, B, and C fires. CO_2 extinguishers will also be provided

Disaster Management Plan

PRECAUTION & MITIGATORY METHODS TO PREVENT DISASTERS:

- Complex is planned to reduce the impact of disasters and to encourage recovery.
- A disaster management cell would be established which will take care of post disaster scenario.
- It would be a volunteer kind of set-up and professionals can also be hired in case of eventuality.
- Complex management and maintenance agency will prepare an integrated, comprehensive management plan.

PRECAUTION & MITIGATORY METHODS TO PREVENT DISASTERS:

(Earthquake Management)

- At the time of designing and constructing the building due care would be taken to have earthquake resistant structures which will conform to IS 1983.
- New systems and devices using non-conventional civil engineering materials would be developed to reduce the earthquake forces acting on structure.

PRECAUTION & MITIGATORY METHODS TO PREVENT DISASTERS:

(Fire Hazard)

- Fire safety would be taken into account and would follow all the safety norms and regulations as per the NBC and other related Indian Standards.
- All electrical cables would be underground and sophisticated modern electrical distribution system to reduce risk of fire.
- Special firefighting equipment's like Automatic Fire Detection and alarm system, automatic Sprinkler System etc. would be installed as per the NBC standards.
- Risk assessment with onsite disaster management plan will be specified to fire, smoke and other emergency conditions.

9.11 If you are using glass as wall materials, provide details and specifications including emissivity and thermal characteristics.

All fenestration with U-factors, SHGC, or visible light transmittance determined, certified and labeled in accordance ISO 15099 shall be adopted.

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

The proposed expansion buildings will be air-conditioned.

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.

Solar energy will be variedly used to meet the energy requirements of as:

- Solar based CFLs and LED lights will be used to minimize the energy consumption in places such as lifts, Staircases, Lobby within the project site etc.

- Green area is provided along with tree plantation which will result in natural air cooling and will reduce the load on conventional energy sources.

10. ENVIRONMENT MANAGEMENT PLAN

The Environment Management Plan (EMP) would consist of all mitigation measures for each component of the environment due to the activities increased during the construction, operation and the entire life cycle to minimize adverse environmental impacts resulting from 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 sites including fire. The detailed EMP for the complex is given below.

10.1 Environmental Management Plan

The Environment Management Plan (EMP) is a site specific plan developed to ensure that the project is implemented in an environmental sustainable manner where all contractors and subcontractors, including consultants, understand the potential environmental risks arising from the project and take appropriate actions to properly manage that risk. EMP also ensures that the project implementation is carried out in accordance with the design by taking appropriate mitigation actions to reduce adverse environmental impacts during its life cycle. The plan outlines existing and potential problems that may adversely impact the environment and recommends corrective measures where required. Also, the plan outlines roles and responsibility of the key personnel and contractors who will be in-charge of the responsibilities to manage the project site.

10.1.1 The EMP is generally

- Prepared in accordance with rules and requirements of the MoEF & CC and CPCB/ SPCB
- To ensure that the component of facility are operated in accordance with the design
- A process that confirms proper operation through supervision and monitoring
- A system that addresses public complaints during construction and operation of the facilities
- A plan that ensures remedial measures is implemented immediately.

The key benefits of the EMP are that it offers means of managing its environmental performance thereby allowing it to contribute to improved environmental quality. The other benefits include cost control and improved relations with the stakeholders.

EMP includes four major elements:

- Commitment & Policy: The management will strive to provide and implement the Environmental Management Plan that incorporates all issues related to air, water, land and noise.
- Planning: This includes identification of environmental impacts, legal requirements and setting environmental objectives.
- Implementation: This comprises of resources available to the developers, accountability of contractors, training of operational staff associated with environmental control facilities and documentation of measures to be taken.
- Measurement & Evaluation: This includes monitoring, counteractive actions and record keeping.

It is suggested that as part of the EMP, a monitoring committee would be formed by Shri Mukandilal Memorial Foundation for Heart & Medical Care comprising of the site in-charge/coordinator, environmental group representative and project implementation team representative. The committee's role would be to ensure proper operation and management of the EMP including the regulatory compliance.

The components of the environmental management plan, potential impacts arising, out of the project and remediation measures are summarized below in **Table 12.**

TABLE 6: SUMMARY OF POTENTIAL IMPACTS AND REMEDIAL MEASURES

S. No.	Environmental components	Potential Impacts	Potential Source of Impact	Controls Through EMP & Design	Impact Evaluation	Remedial Measures
1.	Ground Water Quality	Ground Water Contamination	Construction Phase • Wastewater generated from temporary labor tents.	• No surface accumulation will be allowed.	No significant impact as majority of labors would be locally deployed	
			Operation Phase • Discharge from the project	• STP & ETP to treat the waste water generated from the Hospital.	No negative impact on ground water quality envisaged. Not significant.	
2.	Ground Water Quantity	Ground Water Depletion	Construction Phase • Ground water will not be used for construction activity.	• No impact	No significant impact on ground water quantity envisaged.	
			Operation Phase • The source of	• Rain water harvesting scheme.	No significant impact on	In an unlikely event of non-availability of

			water during operation phase is Municipal water supply.	• Storm water collection for water harvesting. • Percolation well to be introduced in landscape plan. • Awareness Campaign to reduce the water consumption	surface/ground water quantity envisaged.	water supply, water will be brought using tankers.
3.	Surface Water Quality	Surface water contamination	<u>Construction Phase</u> • Surface runoff from site during construction activity.	• Silt traps and other measures such as additional on-site diversion ditches will be constructed to control surface run-off during site development	No off-site impact envisaged as no surface water receiving body is present in the core zone.	
			<u>Operation Phase</u> • Discharge of domestic wastewater to	• Waste water will be treated in STP & ETP.	No off-site impact envisaged	CPCB guidelines will be followed for disposal of sewage.

			STP for treatment and reuse.			
4.	Air Quality	Dust Emissions	Construction Phase • All heavy construction activities	• Suitable control measures will be adopted for mitigating the $PM_{2.5}$ & PM_{10} level in the air as per air pollution control plan.	Not significant because dust generation will be temporary and will settle fast due to dust suppression techniques.	During construction phase the contractors are advised to facilitate masks for the labors. Water sprinklers will be used for suppression of dust during construction phase.
		Emissions of $PM_{2.5}$ & PM_{10}, SO_2, NOx and CO	Construction Phase • Operation of construction equipment and vehicles during site development. • Running D.G. set (back up)	• Rapid on-site construction and improved maintenance of equipment	Not significant.	Regular monitoring of emissions and control measures will be taken to reduce the emission levels.

			Operation Phase • Power generation by DG Set during power failure • Emission from vehicular traffic in use	• Use of low sulphur diesel if available • Providing Footpath and pedestrian ways within the site Green belt will be developed with specific species to help to reduce $PM_{2.5}$ & PM_{10} level • Use of equipment fitted with silencers • Proper maintenance of equipment	Not significant. DG set would be used as power back-up (approx 4 hours) No significant increase in ambient air quality level is expected from the project's activities. There are no sensitive receptors located within the vicinity of site.	• Use of Personal Protective Equipment (PPE) like earmuffs and earplugs during construction activities. • Stack height of DG set above the tallest building as per CPCB standards
5.	Noise Environment					

			<u>Operation Phase</u> • Noise from vehicular movement • Noise from DG set operation	• Green Belt Development • Development of silence zones to check the traffic movement • Provision of noise shields near the heavy construction operations and acoustic enclosures for DG set. • Construction activity will be limited to day time hours only • DG set room will be equipped with acoustic enclosures	No significant impact due to suitable width of Greenbelt.	
6.	Land Environment	Soil contamination	<u>Construction Phase</u> • Disposal of	Construction debris will be collected and suitably used on site as per the solid waste management	No significant impact. Impact will be local, as waste	

			construction debris	plan for construction phase	generated will be reused for filling of low lying areas etc.	
			<u>Operation Phase</u> • Generation of municipal solid waste • Used oil generated from D.G. set	• It is proposed that the solid waste generated will be managed as per MSW Rules, 2016. • Collection, segregation, transportation and disposal will be done as per MSW Management Rules, 2016 by the authorized agency • Used oil generated will be sold to authorized recyclers	Since solid waste is handled by the authorized agency, waste dumping is not going to be allowed. Not significant. Negligible impact.	

7.	Biological Environment (Flora and Fauna)	Displacement of Flora and Fauna on site	Construction Phase • Site Development during construction	• Important species of trees, if any, will be identified and marked and will be merged with landscape plan	The proposed site has shrubs as vegetation	
			Operation Phase • Increase in green covered area	• Suitable green belts will be developed as per landscaping plan in and around the site using local flora	Beneficial impact.	
8.	Socio-Economic Environment	Population displacement and loss of income	Construction Phase • Construction activities leading to relocation	There will be no relocation as local labour will be hired.	No negative impact.	
			Operation Phase • Site operation	• Project will	Beneficial impact	

				provide employment opportunities to the local people in terms of labor during construction and service personnel (guards, securities, gardeners etc) during operations • Providing quality-Integrated infrastructure.		
9.	Traffic Pattern	Increase of vehicular traffic	<u>Construction Phase</u> • Heavy Vehicular movement during construction	• Heavy Vehicular movement will be restricted to daytime only and adequate parking facility will be provided.	No negative impact	
			<u>Operation Phase</u> • Traffic due to vehicles once	• Vehicular movement will be regulated inside the project with adequate roads and parking lots in	No major significant impact as green belt will be developed	

			the project is operational	the project.	which will help in minimizing the impact on environment.	

10.2 ENVIRONMENT MANAGEMENT PLAN

An Environmental Management Plan (EMP) will be required to mitigate the predicted adverse environmental impacts during construction and operation phase of the project and these are discussed in later subsections.

10.2.1 EMP for Air Environment

Construction Phase

To mitigate the impacts of PM_{10} & $PM_{2.5}$ during the construction phase of the project, the following measures are recommended for implementation:

- A dust control plan
- Procedural changes to construction activities

Dust Control Plan

The most cost-effective dust suppressant is water because water is easily available on construction site. Water can be applied using water trucks, handled sprayers and automatic sprinkler systems. Furthermore, incoming loads could be covered to avoid loss of material in transport, especially if material is transported off-site.

Procedural Changes to Construction Activities

Idle time reduction: Construction equipment is commonly left idle while the operators are on break or waiting for the completion of another task. Emission from idle equipment tends to be high, since catalytic converters cools down, thus reducing the efficiency of hydrocarbon and carbon monoxide oxidation. Existing idle control technologies comprises of power saving mode, which automatically off the engine at preset time and reduces emissions, without intervention from the operators.

Improved Maintenance: Significant emission reductions can be achieved through regular equipment maintenance. Contractors will be asked to provide maintenance records for their fleet as part of the contract bid, and at regular intervals throughout the life of the contract. Incentive provisions will be established to encourage contractors to comply with regular maintenance requirements.

Reduction of On-Site Construction Time: Rapid on-site construction would reduce the duration of traffic interference and therefore, will reduce emissions from traffic delay.

Operation Phase

To mitigate the impacts of pollutants from DG set and vehicular traffic during the operational phase of the project, following measures are recommended for implementation:

- DG set emission control measures
- Vehicular emission controls and alternatives
- Greenbelt development

Diesel Generator Set Emission Control Measures

Adequate stack height will be maintained to disperse the air pollutants generated from the operation of DG set to dilute the pollutants concentration within the immediate vicinity. Hence no additional emission control measures have been suggested.

Vehicle Emission Controls and Alternatives

Use of clean Fuel by vehicles on-site: Low sulphur diesel will be used as clean fuel (if available locally). This will reduce emissions on-site and in areas from where these vehicles pass.

Footpaths and Pedestrian ways: Adequate footpaths and pedestrian ways would be provided at the site to encourage non-polluting methods of transportation.

10.2.2 EMP FOR NOISE ENVIRONMENT

Construction Phase

To mitigate the impacts of noise from construction equipment during the construction phase on the site, the following measures are recommended for implementation.

Time of Operation: Noisy construction equipment would not be allowed to use at night time.

Job Rotation and Hearing Protection: Workers employed in high noise areas will be employed on shift basis. Hearing protection such as earplugs/muffs will be provided to those working very close to the noise generating machinery.

Operation Phase

To mitigate the impacts of noise from diesel generator set during operational phase, the following measures are recommended:

- Adoption of Noise emission control technologies

- Greenbelt development

Greenbelt Development:

Green belt will be developed along the periphery of the project premises along with the internal parks and lawns. Total green area is 12,140.55 m^2 i.e. 20.16 % of the total plot area.

EMP FOR WATER ENVIRONMENT

Construction Phase

To prevent degradation and to maintain the quality of the water source, adequate control measures have been proposed. To check the surface run-off as well as uncontrolled flow of water into any water body check dams with silt basins are proposed. The following management measures are suggested to protect the water source being polluted during the construction phase:

- Avoid excavation during monsoon season
- Care would be taken to avoid soil erosion
- Common toilets will be constructed on site during construction phase and the wastewater would be channelized to the septic tanks in order to prevent wastewater to enter into the water bodies
- Any area with loose debris within the site shall be planted
- To prevent surface and ground water contamination by oil and grease, leak-proof containers would be used for storage and transportation of oil and grease. The floors of oil and grease handling area would be kept effectively impervious. Any wash off from the oil and grease handling area or workshop shall be drained through imperious drains.
- Collection and settling of storm water, prohibition of equipment wash downs and prevention of soil loss and toxic release from the construction site are necessary measure to be taken to minimize water pollution
- All stacking and loading area will be provided with proper garland drains, equipped with baffles, to prevent run off from the site, to enter into any water body.

Operation Phase

In the operation phase of the project, water conservation and development measures will be taken, including all possible potential for rain water harvesting. Following measures will be adopted:

- Water source development.
- Minimizing water consumption.

Water Source Development

Water source development shall be practiced by installation of scientifically designed Rain Water Harvesting system. Rainwater harvesting promotes self-sufficiency and fosters an appreciation for water as a resource.

Minimizing Water Consumption

Consumption of fresh water will be minimized by combination of water saving devices and other domestic water conservation measures. Further, to ensure ongoing water conservation, an awareness program will be introduced. The following section discusses the specific measures, which shall be implemented:

Domestic and Commercial Usage

- Use of water efficient plumbing fixtures (ultra flow toilets and urinals, low flow sinks, water efficient dishwashers and washing machines). Water efficient plumbing fixtures uses less water with no marked reduction in quality and service
- Leak detection and repair techniques.
- Sweep with a broom and pan where possible, rather than hose down for external areas.
- Meter water usage: Implies measurement and verification methods.

Monitoring of water uses is a precursor for management.

Horticulture

- Drip irrigation system shall be used for the lawns and other green area. Drip irrigation can save 15-40% of the water, compared with other watering techniques.

- Plants with similar water requirements shall be grouped on common zones to match precipitation heads and emitters.
- Use of low-angle sprinklers for lawn areas.
- Select controllers with adjustable watering schedules and moisture sensors to account for seasonal variations and calibrate them during commissioning.
- Place 3 to 5 inches of mulch on planting beds to minimize evaporation.

Storm Water Management

Most of the storm water produced on site will be harvested for ground water recharge in future. Thus proper management of this resource is a must to ensure that it is free from contamination.

Contamination of Storm Water is possible from the following sources:

- Diesel and oil spills in the diesel power generator and fuel storage area
- Waste spills in the solid / hazardous waste storage area
- Oil spills and leaks in vehicle parking lots
- Silts from soil erosion in gardens

A detailed storm water management plan will be developed which will consider the possible impacts from above sources. The plan will incorporate best management practices which will include following:

- Regular inspection and cleaning of storm drains
- Clarifiers or oil/separators will be installed in all the parking areas. Oil / grease separators installed around parking areas and garages will be sized according to peak flow guidelines. Both clarifiers and oil/water separators will be periodically pumped in order to keep discharges within limits
- Covered waste storage areas
- Avoid application of pesticides and herbicides before wet season
- Secondary containment and dykes in fuel/oil storage facilities
- Conducting routine inspection to ensure cleanliness
- Provision of slit traps in storm water drains
- Good housekeeping in the above areas

10.2.4 EMP FOR LAND ENVIRONMENT

Construction Phase

The waste generated from construction activity includes construction debris, biomass from land clearing activities, waste from the temporary make shift tents for the labors and hazardous waste. Following section discuss the management of each type of waste. Besides waste generation, management of the topsoil is an important area for which management measures are required.

Construction Debris

Construction debris is bulky and heavy and re-utilization and recycling is an important strategy for management of such waste. As concrete and masonry constitute the majority of waste generated, recycling of this waste by conversion to aggregate can offer benefits of reduced landfill space and reduced extraction of raw material for new construction activity. This is particularly applicable to the project site as the construction is to be completed in a phased manner.

Mixed debris with high gypsum, plaster, shall not be used as fill, as they are highly susceptible to contamination, and will be send to designated solid waste landfill site.

Metal scrap from structural steel, piping, concrete reinforcement and sheet metal work shall be removed from the site by construction contractors. A significant portion of wood scrap will be reused on site. Recyclable wastes such as plastics, glass fiber insulation, roofing etc shall be sold to recyclers.

Hazardous waste

Construction sites are sources of many toxic substances such as paints, solvents wood preservatives, pesticides, adhesives and sealants. Hazardous waste generated during construction phase shall be stored in sealed containers and disposed off as per The Hazardous Wastes (Management, Handling & Trans boundary Movement) Rules, 2016.

Some management practices to be developed are:

- Herbicides and pesticide will not be over applied (small-scale applications) and not applied prior to rain.
- Paintbrushes and equipment for water and oil based paints shall be cleaned within a contained area and will not be allowed to contaminate site soils, water courses or drainage systems.

- Provision of adequate hazardous waste storage facilities. Hazardous waste collection containers will be located as per safety norms and designated hazardous waste storage areas will be away from storm drains or watercourses.
- Segregation of potentially hazardous waste from non-hazardous construction site debris.
- Well labeled all hazardous waste containers with the waste being stored and the date of generation.
- Instruct employees and subcontractors in identification of hazardous and solid waste.

Even with careful management, some of these substances are released into air, soil and water and many are hazardous to workers. With these reasons, the best choice is to avoid their use as much as possible by using low-toxicity substitutes and low VOC (Volatile Organic Compound) materials.

Waste from Temporary Makes Shift Tents for Labors

Wastes generated from temporary make shift labor tents which will be managed by the contractor of the site. The wastewater generated will be channelized to the septic tank.

Top Soil Management

To minimize disruption of soil and for conservation of top soil, the contractor shall keep the top soil cover separately and stockpile it. After the construction activity is over, top soil will be utilized for landscaping activity. Other measures, which would be followed to prevent soil erosion and contamination include:

- Maximize use of organic fertilizer for landscaping and green belt development
- To prevent soil contamination by oil/grease, leaf proof containers would be used for storage and transportation of oil/grease and wash off from the oil/grease handling area shall be drained through impervious drains and treated appropriately before disposal
- Working in a small area at a point of time (phase wise construction)
- Construction of erosion prevention troughs/berms.

Operational Phase

The philosophy of solid waste management at the proposed complex will be to encouraging the four R's of waste i.e. **R**eduction, **R**euse, **R**ecycling and **R**ecovery (materials & energy). Regular public awareness meetings will be conducted to involve the public in the proper segregation and storage techniques. The Environmental Management Plan for the solid waste focuses on three major components during the life cycle of the waste management system i.e., collection and transportation, treatment or disposal and closure and post-closure care of treatment/disposal facility.

Collection and Transportation

- During the collection stage, the solid waste of the project will be segregated into biodegradable waste and non-biodegradable. Biodegradable waste and non biodegradable waste will be collected in separate bins. The recyclable wastes will be sent off to recyclabers. Proper guidelines for segregation, collection and storage will be prepared as per MSW Rules, 2016.
- To minimize littering and odour, waste will be stored in well-designed containers/ bins that will be located at strategic locations to minimize disturbance in traffic flow
- Care would be taken such that the collection vehicles are well maintained and generate minimum noise and emissions. During transportation of the waste, it will be covered to avoid littering.

Disposal

With regards to the disposal/treatment of waste, the management will take the services of the authorized agency for waste management and disposal of the same on the project site during its operational phase.

Bio-Medical waste generated will be approx. 279 kg/day. And will be collected in the color

coded bags as per rules. The biomedical waste is being disposed through an approved agency.

10.2.5 EMP FOR ECOLOGICAL ENVIRONMENT

Construction activity changes the natural environment. The project requires the implementation of following choices exclusively or in combination.

Construction Stage

- Restriction of construction activities to defined project areas, which are ecologically sensitive
- Restrictions on location of temporary labor tents and offices for project staff near the project area to avoid human induced secondary additional impacts on the flora and fauna species
- Cutting, uprooting, coppicing of trees or small trees if present in and around the project site for cooking, burning or heating purposes by the labors will be prohibited and suitable alternatives for this purpose will be made
- Along with the construction work, the peripheral green belt would be developed with suggested native plant species, as they will grow to a full-fledged covered at the time of completion.

Operation Stage

Improvement of the current ecology of the project site will entail the following measures:

- Plantation and Landscaping
- Green Belt Development
- Park and Avenue Plantation

The section below summarizes the techniques to be applied to achieve the above objectives:

Plantation and landscaping

Selection of the plant species would be done on the basis of their adaptability to the existing geographical conditions and the vegetation composition of the forest type of the region earlier found or currently observed.

Green Belt Development Plan

The plantation matrix adopted for the green belt development includes pit of 0.3 m × 0.3 m size with a spacing of 2 m x 2 m. In addition, earth filling and manure may also be required for the proper nutritional balance and nourishment of the sapling. It is also

recommended that the plantation has to be taken up randomly and the landscaping aspects could be taken into consideration.

Peripheral plantation comprising of medium height trees (7 m to 10 m) and shrubs (5 m height) are proposed for the green belt. In addition creepers will be planted along the boundary wall to enhance its insulation capacity.

Selection of Plant Species for Green Belt Development

The selection of plant species for the development depends on various factors such as climate, elevation and soil. The plants would exhibit the following desirable characteristics in order to be selected for plantation

1. The species should be fast growing and providing optimum penetrability
2. The species should be wind-firm and deep rooted
3. The species should form a dense canopy
4. As far as possible, the species should be indigenous and locally available
5. Species tolerance to air pollutants like SO_2 and NO_2 should be preferred
6. The species should be permeable to help create air turbulence and mixing within the belt
7. There should be no large gaps for the air to spill through
8. Trees with high foliage density, leaves with larger leaf area and hairy on both the surfaces
9. Ability to withstand conditions like inundation and drought
10. Soil improving plants (Nitrogen fixing rapidly decomposable leaf litter)
11. Attractive appearance with good flowering and fruit bearing
12. Bird and insect attracting tree species
13. Sustainable green cover with minimal maintenance.

10.2.6 EMP for Socio-Economic Environment

The social management plan has been designed to take proactive steps and adopt best practices, which are sensitive to the socio-cultural setting of the region. The Social Management Plan for project focuses on the following components:

- **Income Generation Opportunity during Construction and Operation Phase**

  The project would provide employment opportunity during construction and operation phase. There would also be a wide economic impact in terms of generating opportunities for secondary occupation within and around the complex. The main principles considered for employment and income generation opportunities are out lined below:

  - Employment strategy will provide for preferential employment of local people
  - Conditions of employment would address issues like minimum wages and medical care for the workers. Contractors would be required to abide to employment priority towards locals and abide by the labor laws regarding standards on employee terms and conditions.

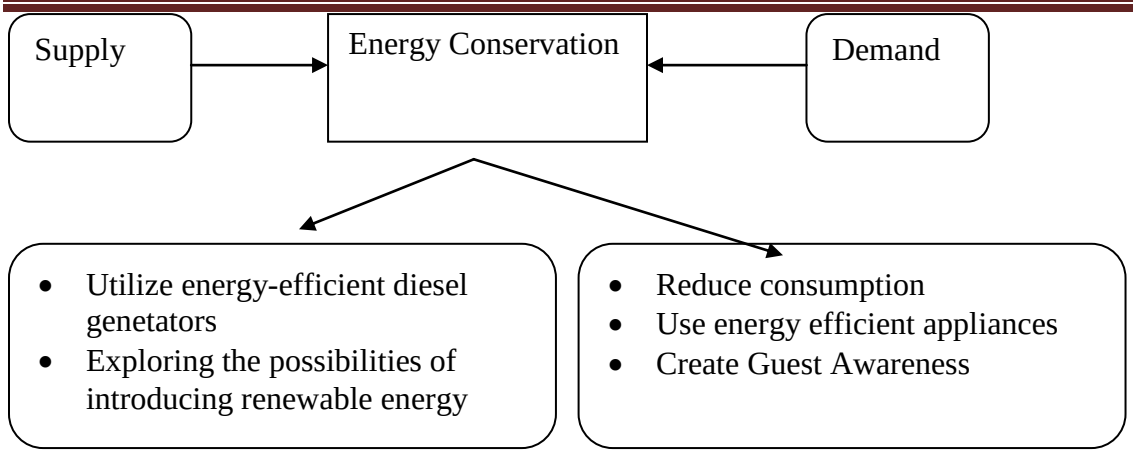
- **Improved Working Environment for Employees**

  The project would provide safe and improved working conditions for the workers employed at the facility during construction and operation phase. With the proposed ambience and facilities provided, the complex will provide a new experience in living and recreations. Following measures would be taken to improve the working environment of the area:

  - Less use of chemicals and biological agents with hazard potential
  - Developing a proper interface between the work and the human resource through a system of skill improvement
  - Provision of facilities for nature care and recreation e.g. indoor games facilities
  - Measures to reduce the incidence of work related injuries, fatalities and diseases
  - Maintenance and beautifications of the complex and the surrounding roads.

10.2.7 EMP FOR ENERGY CONSERVATION

Energy conservation program will be implemented through measures taken both on energy demand and supply.



Energy conservation will be one of the main focuses during the complex planning and operation stages. The conservation efforts would consist of the following:

❖ **Architectural design**

- Maximize the use of natural lighting through design.
- The orientation of the buildings will be done in such a way that maximum daylight is available.
- The green areas will be spaced, so that a significant reduction in the temperature can take place.

❖ **Energy Saving Practices**

- Energy efficient lamps will be provided within the complex.
- Constant monitoring of energy consumption and defining targets for energy conservation.
- Adjusting the settings and illumination levels to ensure minimum energy used for desired comfort levels.

❖ **Behavioral Change on Consumption**

- Promoting public awareness on energy conservation
- Training staff on methods of energy conservation and to be vigilant to such opportunities.

10.3 ENVIRONMENTAL MANAGEMENT SYSTEM AND MONITORING PLAN

For the effective and consistent functioning of the complex, an Environmental Management system (EMS) would be established at the site. The EMS would include the following:

- An Environmental management cell.
- Environmental Monitoring.
- Personnel Training.
- Regular Environmental audits and Correction measures.
- Documentation – standards operation procedures Environmental Management Plan and other records.

10.3.1 ENVIRONMENTAL MANAGEMENT CELL

Apart from having an Environmental Management Plan, it is also proposed to have a permanent organizational set up charged with the task of ensuring its effective implementation of mitigation measures and to conduct environmental monitoring. The major duties and responsibilities of Environmental Management Cell shall be as given below:

- To implement the environmental management plan.
- To assure regulatory compliance with all relevant rules and regulations.
- To ensure regular operation and maintenance of pollution control devices.
- To minimize environmental impact of operations as by strict adherence to the EMP.
- To initiate environmental monitoring as per approved schedule.
- Review and interpretation of monitored results and corrective measures in case monitored results are above the specified limit.
- Maintain documentation of good environmental practices and applicable environmental laws for a ready reference.
- Maintain environmental related records.
- Coordination with regulatory agencies, external consultants, monitoring laboratories.
- Maintenance of log of public complaints and the action taken.

10.3.2 ENVIRONMENTAL MONITORING

The purpose of environmental monitoring is to evaluate the effectiveness of implementation of Environmental Management Plan (EMP) by periodic monitoring. The important environmental parameters within the impact area are selected so that any adverse affects are detected and time action can be taken. The project proponent will monitor ambient air Quality, Ground Water Quality and Quantity, and Soil Quality in accordance with an approved monitoring schedule.

Table 7: Suggested Monitoring Program for Project

S. No.	Type	Locations	Parameters	Period and Frequency
1.	Ambient Air Quality	Project Site	Criteria Pollutants: SO_2, NO2, PM10, PM2.5, CO	Twice in a Year as per EIA Notification 2006.
2.	Groundwater (Portability testing)	Project site	Drinking water parameters as per IS 10500.	Twice in a Year as per EIA Notification 2006
3.	Ambient Noise	Project site	dB (A) levels	Twice in a Year as per EIA Notification 2006
4.	Soil quality	Project site	Organic matter, C.H., N, Alkalinity, Acidity, heavy metals and trace metal, Alkalinity, Acidity.	Twice in a Year as per EIA Notification 2006
5.	Waste Characterization	Commercial	Physical and Chemical composition	Twice in a Year as per EIA Notification 2006

10.3.3 Awareness and Training

Training and human resource development is an important link to achieve sustainable operation of the facility and environment management. For successful functioning of the project, relevant EMP would be communicated to:

Contractors

Contractors must be made aware of the importance of waste segregation and disposal, water and energy conservation. The awareness can be provided by periodic Integrated Society meetings. They would be informed of their duties.

10.3.4 Environmental Audits and Corrective Action Plans

To assess whether the implemented EMP is adequate, periodic environmental audits will be conducted by the project proponent's Environmental division. These audits will be followed by Correction Action Plan (CAP) to correct various issues identified during the audits.

CONCEPTUAL PLAN

w.r.t.

EXPANISON OF SHANTI MUKAND HOSPITAL

At

2, INSTITUTIONAL AREA, VIKAS MARG EXTENSION, KARKARDOOMA, DELHI

For

SHRI MUKANDILAL MEMORIAL FOUNDATION FOR HEART & MEDICAL CARE

May, 2020

Schedule: 8(a), Category: B
Built Up Area – **27,862.512** m^2

QCI Certificate no. NABET/EIA/1821/SA 0110

PREPARED BY

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CONCEPTUAL PLAN

INTRODUCTION

Shanti Mukand Hospital was established in 1995. Shanti Mukand Hospital is a 200-beded most integrated medical centre of East Delhi, providing comprehensive diagnostic and treatment in almost all medical and surgical specialities. Each speciality is a 'Centre of Excellence.

The hospital has the biggest cancer facility of East Delhi, offering latest medical, surgical & radiological services. The setting up of SMH in association with ClearMedi Healthcare is created with the aim of providing comprehensive medical resources with multi-disciplinary team under one roof. Our centre is home to internationally renowned cancer physicians.

The Existing Built up Area of the hospital i.e. 8,947.022 m^2 has been constructed. Block A & Block B are in operation phase.

Following Blocks will added as new Buildings:

- Vertical expansion of 3 new floors on existing Block-B
- Block C

SITE LOCATION AND SURROUNDINGS

The project site is located at 2, Institutional Area, Vikas Marg Extension, Karkardooma, Delhi on a land measuring of 1.69 acres. The geographical co-ordinates of project site are 28°38'43.88"N and 77°18'07"E.

PROJECT COST

Total Project cost is INR 99.86 Crores.

CONNECTIVITY

The Nearest Highway is NH-9 which is 2.5 km (S) away from project site & NH-91 is 13.5 km towards East direction. The nearest Railway Station is Anand Vihar Railway Station is about 1.5 km (ENE) away from the project site. Indira Gandhi International Airport is 20 km (WSW) from project site.

AREA STATEMENT

The total area of project site is 6,852.64 m^2 (1.69 acres). The detailed area statement along with brief details of the project is provided below in **Table 1:**

Table 1: Detailed Area Statement

S. No.	Particulars	Existing (m^2)	Expansion (m^2)	Total (m^2)
1.	**Total Plot area**	**6,852.64**	**-**	**6,852.64**
2.	Permissible ground coverage (@40% of Total Plot area)	2741.06		
3.	**Proposed ground coverage (@35.20 % of Total Plot area)**	**1,663.612**	**748.33**	**2,411.94**
4.	Permissible FAR @ 3.75	25,697.4		
5.	**Proposed FAR @ 2.78**	**8,276.064**	**10,795.22**	**19,071.284**
6.	**Total NON-FAR Area**	**670.958**	**8,120.270**	**8,791.228**
7.	**Total Built up area (5+6)**	**8,947.022**	**18,915.490**	**27,862.512**
8.	Proposed Landscape Area (@23.12% of Total Plot Area)	1,584.59 sqm		
9.	Number of Beds	200	200	400
10.	Maximum height of the building (m)	39.3		

POPULATION DENSITY

The total (existing + expansion) population of hospital will be approx. 3,534 persons which includes outdoor patients, indoor patients, attendants with indoor patients and staff). Population breakup is given below in Table 2.

Table 2: Population Break-up

S. No	Type of population	Existing	Expansion	Total
A.	Outdoor patients	200	800	1000
B.	Indoor patients	200	200	400
C.	Staff (doctors, nurses, etc.)	657	657	1314
D.	Inpatient attendants	260	560	820
	TOTAL	**1,317**	**2,217**	**3,534**

WATER REQUIREMENT & SUPPLY SYSTEM

The total (existing + expansion) water requirement for the project will be approx. 464 KLD. The water supply is being provided by Delhi Jal Board (DJB). The fresh water requirement will be approx. 206 KLD post expansion. Daily water requirement calculation is given below in Table 3 to 6:

Table 3: Calculations for Daily Water Demand (Existing)

S. No.	Description	Occupancy	Rate of water demand (lpcd)	Total Water Requirement (KLD)
A.	**Domestic water**			
	Inpatients/Beds	200	450	90
	OPD patients	200	15	3
	Staff (Doctors +	657	45	29.65

	Nurses)			
	Inpatient attendants	260	15	3.9
Sub-Total (A) = 130.45 say 130 KLD				
B.	**Horticulture** (1,584.59 sqm)	6 l/sqm		10 KLD
C.	**Kitchen & Laundary Usage**	38 KLD		
Grand total (A+B+C)				**178 KLD**

Table 4: Calculations for Daily Water Demand (Expansion)

S. No.	Description	Occupancy	Rate of water demand (lpcd)	Total Water Requirement (KLD)
A.	**Domestic water**			
	Inpatients/Beds	200	450	90
	OPD patients	800	15	12
	Staff (Doctors + Nurses)	657	45	29.65
	Inpatient attendants	560	15	8.4
Sub-Total (A) = 140.05 say 140 KLD				
B,	**Kitchen & Laundary Usage**	38 KLD		
C.	**HVAC Cooling**	150 KLD		

Grand total (A+B+C)	**188 KLD**

Table 5: Calculations for Total Daily Water Demand (Existing + Expansion)

S. No.	Description	Occupancy	Rate of water demand (lpcd)	Total Water Requirement (KLD)
A.	**Domestic water**			
	Inpatients/Beds	400	450	180
	OPD patients	1000	15	15
	Staff (Doctors + Nurses)	1314	45	59.13
	Inpatient attendants	820	15	12.3
Sub-Total (A) = 266.43 say 266 KLD				
B.	**Horticulture (**1,584.59 m^2)	6 l/sqm		10
C.	**HVAC cooling**	150 KLD		
D.	**Kitchen & Laundary Usage**	38 KLD		
Grand total (A+B+C+D)				**464 KLD**

Table 6 (a): Total Wastewater Calculations w.r.t. ETP

S. No.	Description	Quantity (KLD)

1.	Fresh and flushing water requirement for the hospital including: IPD (@5% of total IPD water requirement) OPD (@10% of total OPD water requirement) OT, Blood Bank, Lab Laundry	**67 KLD** 9 KLD 2 KLD 18 KLD 38 KLD
2.	Wastewater going to ETP @ 80% of (9 + 1.5 KLD) and 100% of 56 KLD	8.4 + 56 = 64.4 **say 64 KLD**
3.	ETP Capacity	**80 KL**

Table 6 (b): Total Wastewater Calculations w.r.t. STP

S. No.	Description	Quantity (KLD)
1.	Fresh water requirement for the hospital (excluding IPD. OPD, OT, Blood Bank, Lab & Laundry) @ 70% of (266 – 67 = 199 KLD)	139
2.	Flushing water requirement (excluding IPD, OPD, OT, Blood Bank & Lab) @ 30% of (266 – 67 = 199 KLD)	60
3.	Wastewater going to STP @ 80% of 139 KLD + 100% of 60 KLD	111.2 + 60 = 171.2 say **171 KLD**

4.	STP Capacity	205 KL

The water balance diagrams for different seasons are shown below:

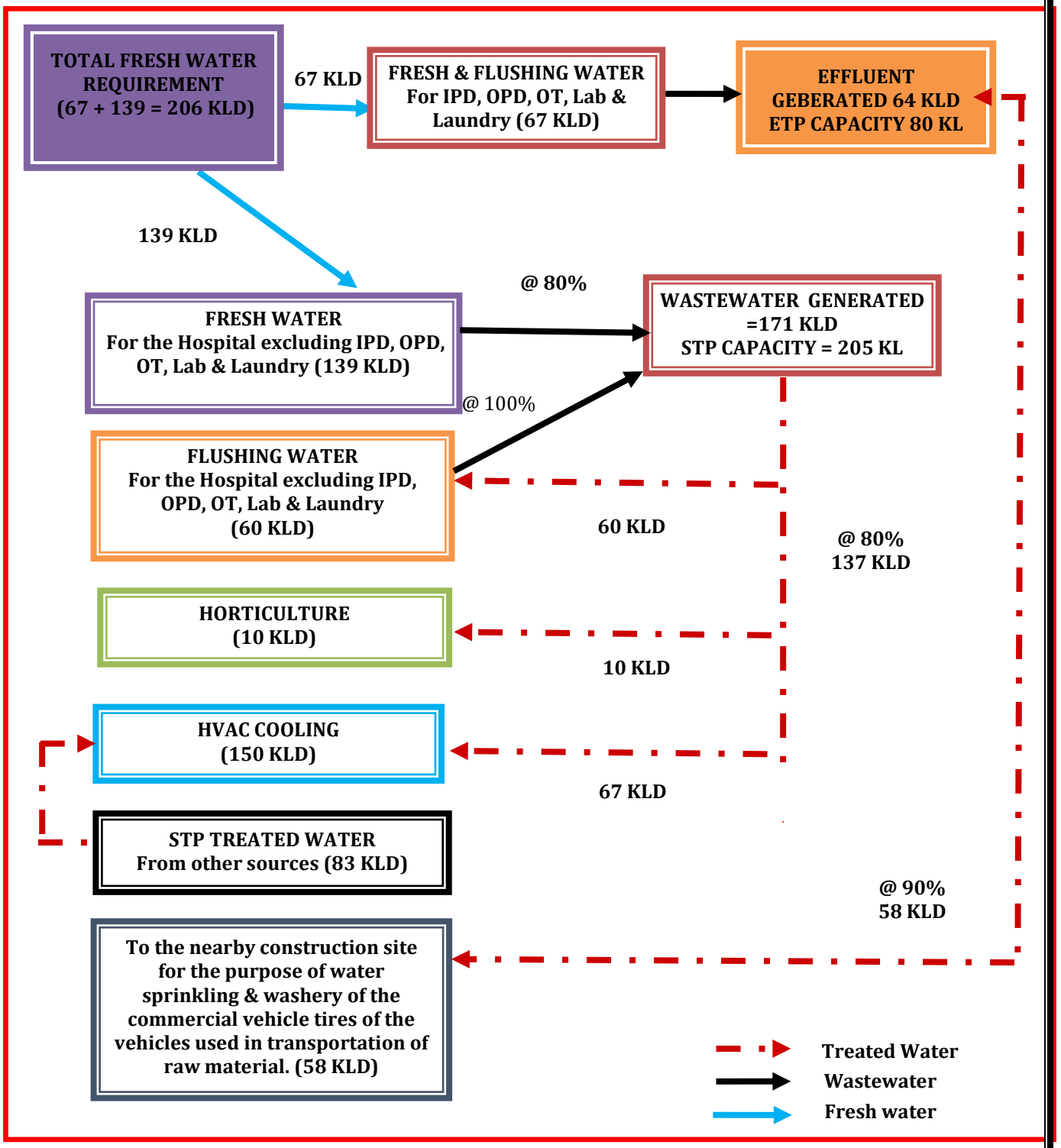

Figure 1: Water Balance Diagram (Non Rainy Season)

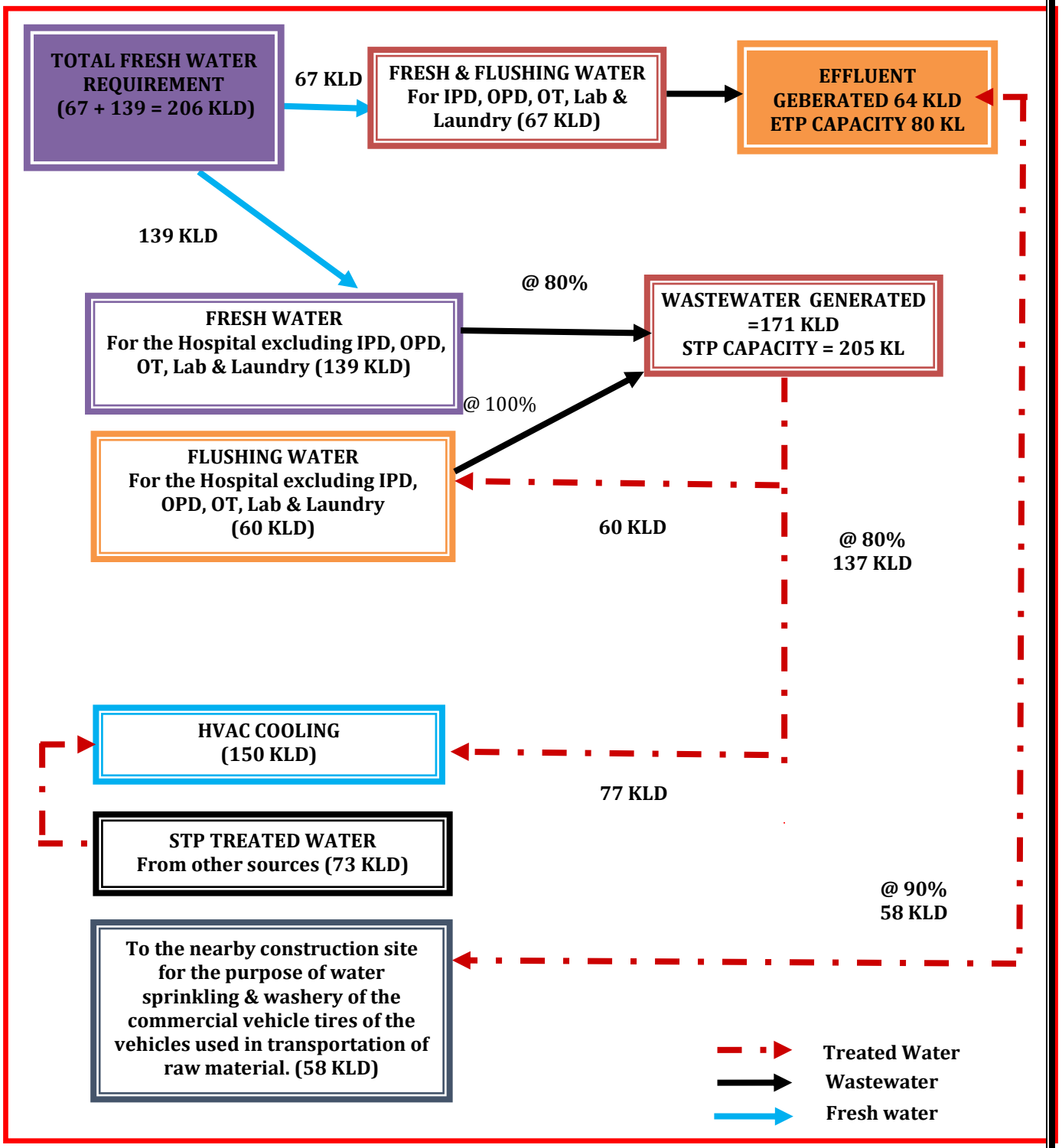

Figure 2: Water Balance Diagram (Rainy Season)

Waste Water/Effluent Generation & Treatment

It is expected that waste water (domestic sewage) generated from the project will be approx. 171 KLD (@ 80% of fresh water, 100 % flushing water). The domestic sewage will be treated in onsite STP capacity of 205 KL generating 137 KLD of recoverable water from STP which will be reused for Flushing, Horticulture, HVAC Cooling, etc.

The wastewater (trade effluent) generated from OPD, IPD, OT, Blood bank, labs & laundry will be approx. 64 KLD, which will be treated in onsite ETP of 80 KL capacity. We will supply the total treated water from the ETP to the nearby construction site for the purpose of water sprinkling & washery of the commercial vehicle tires of the vehicles used in transportation of raw material.

EFFLUENT TREATMENT PLANT TECHNOLOGY

DESIGN BASIS:

Capacity =**80 KL**

Operating Hours = 24

Table 7(a): Inlet ETP Characteristics

S.No.	PARAMETERS	AVERAGE CHARACTERISTICS
1.	pH	5.5-8.5
2.	Total suspended solids	300-400 mg/lit
3.	Oil & Grease	10-15 mg/lit
4.	Biological Oxygen Demand (BOD) 5 day at 27°C	500-600 mg/lit
5.	C.O.D.	1000-1100 mg/lit

PROCESS DETAILS:

Bar Screen

Effluent from the source is usually received into the bar screen chamber by gravity. Screen provided will remove all floating and big size matter such as plastic bottles, polythene bags, glasses, stones, etc., which may otherwise choke the pipeline and pumps.

Oil and Grease Trap

If the effluent generated includes higher concentrations of oil and grease, it needs to be removed before biological treatment as it otherwise may cause problems for biological treatment. A small civil construction tank with a baffle wall and slotted oil pipe skimmer is provided. The oil and grease removed by gravity floats to the surface, which is removed by the oil skimmer.

Oil and grease trap will be provided to arrest the impurities of waste water from main kitchen of the project. Collected oil will be disposed through a local vendor.

Equalization Tank

Effluent generation is irregular so we need to have an EQT to maintain universal flow to keep system on regular process.

Transfer of Effluent

Transfer of effluent from Equalization Tank to FMR tank. The distance of transfer will be kept beyond 20 meter. The transfer pump shall be submersible with 38 mm empanel clearance.

Treatment process

Online dosing of alum, lime and poly shall be dosed to control the COD and after that effluent shall pass through the aerobic process to stabilize the biological process and after that finally it will be pass through Tube settler to settle the waste.

PVC satirized fluidized media is provided for the prevailing of microorganism on it for the treatment of the Sewage biologically. The biologically treated water with bio flocs shall be transferred to the secondary settling tank, where tube deck media is provided to enhance the settling of the bio flocs.

UV radiation

After settling tank UV radiation will be passed through the effluent to remove bacterial impurities.

Break water tank

The clarified water shall be stored in break water tank to feed in Filtration plant and carbon filter for final treatment.

Multi Grade Filtration Plant

After Break water tank it will be pumped to filtration plant to treat further

Activated carbon Filter

After Filtration plant filtered water shall be pass through ACF to remove smell and colour.

Treated water tank

Treated water shall be stored in tank for reuse in horticulture and flushing. The treated water shall be softened before reuse in HVAC cooling towers.

Sludge

The sludge from the Clarifier will be removed through Centrifugation system. Recovered sludge shall be used as manure and water shall be re-circulated to EQT.

Table 7 (b): Outlet ETP Characteristics

S.No.	PARAMETERS	AVERAGE CHARACTERISTICS
1.	pH	6.5-8.5
2.	Total suspended solids	<30 mg/lit
3.	Oil & Grease	<5 mg/lit
4.	Biological Oxygen Demand (BOD) (5 day at 20°C)	<10 mg/lit
5.	C.O.D.	<20-50 mg/lit

6.	Bioassay test	90% survival of fish after 96 hrs in 100% of inlet

Other parameters will be maintained as per CPCB norms.

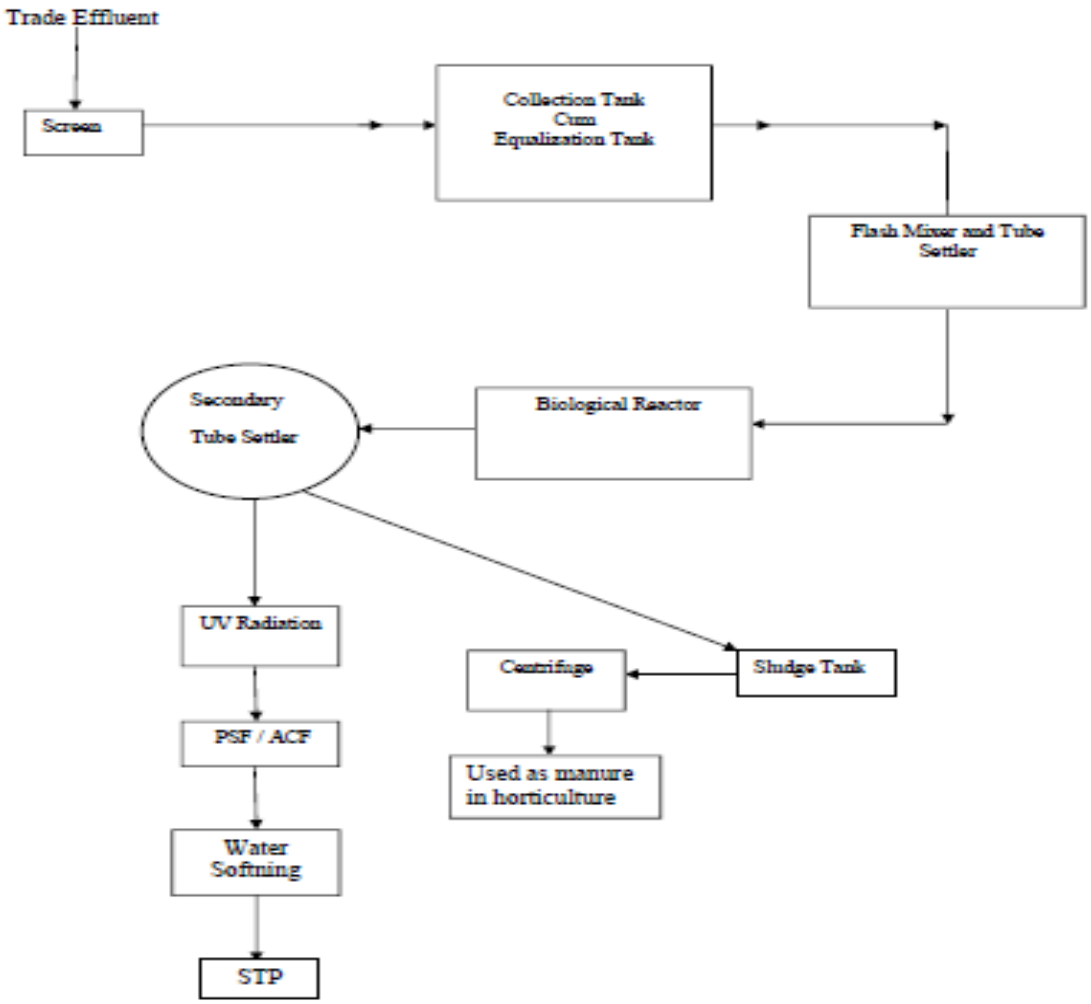

Figure 3: Schematic Diagram of ETP

SEWAGE TREATMENT TECHNOLOGY

Sewerage System

An external sewage network will collect the sewage from all units, and flow by gravity to the existing sewage treatment plant. The plant is based on MBBR technology. It shall be upgraded using tertiary treatment and water softening plant for water to be used for cooling towers.

The benefits of providing the Sewage Treatment Plant in the present circumstances:

- Reduced net daily water requirements, source for Horticultural purposes by utilization of the treated wastewater.
- Reduced dependence on the public utilities for water supply and sewerage systems. Sludge generated from the Sewage Treatment Plant will be rich in organic content and an excellent fertilizer for horticultural purposes.

a. Wastewater Details

Daily load from hospital	:	171 KLD
Duration of flow to STP	:	24 hours Maximum
Temperature	:	32^{o}C
(d) pH	:	6.0 to 8.5
(e) Colour	:	Mild
(f) T.S.S. (mg/l)	:	300-450 mg/l
(g) BOD (mg/l)	:	300-450 mg/l
(h) COD (mg/l)	:	300-450 mg/l
(i) Oil & Grease ABS	:	< 50 mg/l

b. <u>Final discharge characteristics</u>

(a) pH	:	6.0 to 8.5
(b) Oil & Grease	:	<10 mg/l
(c) B.O.D.	:	<10 mg/l
(d) C.O.D.	:	<50 mg/l
(e) Total Suspended Solids		

(for flushing and horticulture) : <90 mg/l

(f) Total Hardness (for HVAC) : 0 mg/l

Treatment Technology

MBBR TECHNOLOGY:

Moving bed biofilm reactor technology is based on the principle of attached growth process. Raw sewage is being collected under gravity into the equalization tank after allowing to pass through the bar screen. Screens are provided in screen chambers and manually cleaned by going down to a platform. The bar screen, by removing coarse solids from the sewage help in protecting the raw sewage pump.

Fully submersible centrifugal non clog sewage handling pump is provided in the collection cum equalization tank to pump the collected waste water to the next MBBR tanks. Automatic level controller is being provided in the tank to turn the pump off at the low water level in the tank and to start the pump when water level is high automatically. Air is being introduced in this tank to prevent any potential foul smell problem & to provide the mixing of wastewater to avoid the sedimentation of solids in this tank. Air Grid is being used for aeration purpose which is non-clog.

The sewage collected in equalization tank is pumped the moving bed bioreactor. There are two nos. of bioreactors in series for the efficient working and removal of BODs for the required retention time. The process inside the moving bed bioreactors consists of adding small cylindrical-shaped polyethylene/polypropylene carrier elements in aerated basins to support biofilm growth. The small cylinders are provided with a cross inside the cylinder and longitudinal fins on the outside. The biofilm carriers are maintained in the reactor by the use of a perforated plate with appropriate slot at the tank outlet. Air agitation or mixers are applied in a manner to continuously circulate the packing. The packing is filled 25 to 50 percent of the tank volume. The waste water from first bioreactor flows by gravity through the perforated plate/mesh to the next bioreactor kept in series. Inside the bioreactors, aerobic bacteria grow in an attached growth from around the moving plastic media inside the reactors. The bacteria have to reduce BOD & COD of waste water in the presence of oxygen provided through the air

grids located at the bottom of the reactors. The Process does not require any return activated sludge flow or backwashing.

From the bio-reactors, the effluent passes by gravity into the clarifier (Tube Settling Tank). Clarifier is a hopper bottom sedimentation tank provided with appropriate size PVC tube deck media. The suspended solids settle at the bottom of the tank & clear supernatant overflow to filter feed tank through outlet launder. The collected sludge at bottom is transferred through pumps to sludge holding tank.

The clear supernatant after clarifier is collected in to filter feed tank. This tank acts as housing tank for filter feed pumps. The clarified & dis-infected water is then fed to filtration unit.
Filtration unit consisting of Dual Media sand filter, activated carbon filter and ultra filtration system (optional) removes the residual impurities such as odor/color, suspended solids, BOD/COD. The treated water after the filtration unit is being collected in Irrigation cum Flushing water storage tank from where it is transferred to flushing water tank at terrace & Irrigation System.

Excess sludge from the bottom of the settling tank is removed and transferred to sludge holding tank. Air grid is being provided in this tank to avoid conversion into anaerobic conditions, thickening of sludge and keep sludge in homogenous condition. The digested & thickened sludge is further thickened through Sludge Dewatering System (Filter press with screw pump) and disposed off periodically through closed tanker or can be reused as manure.

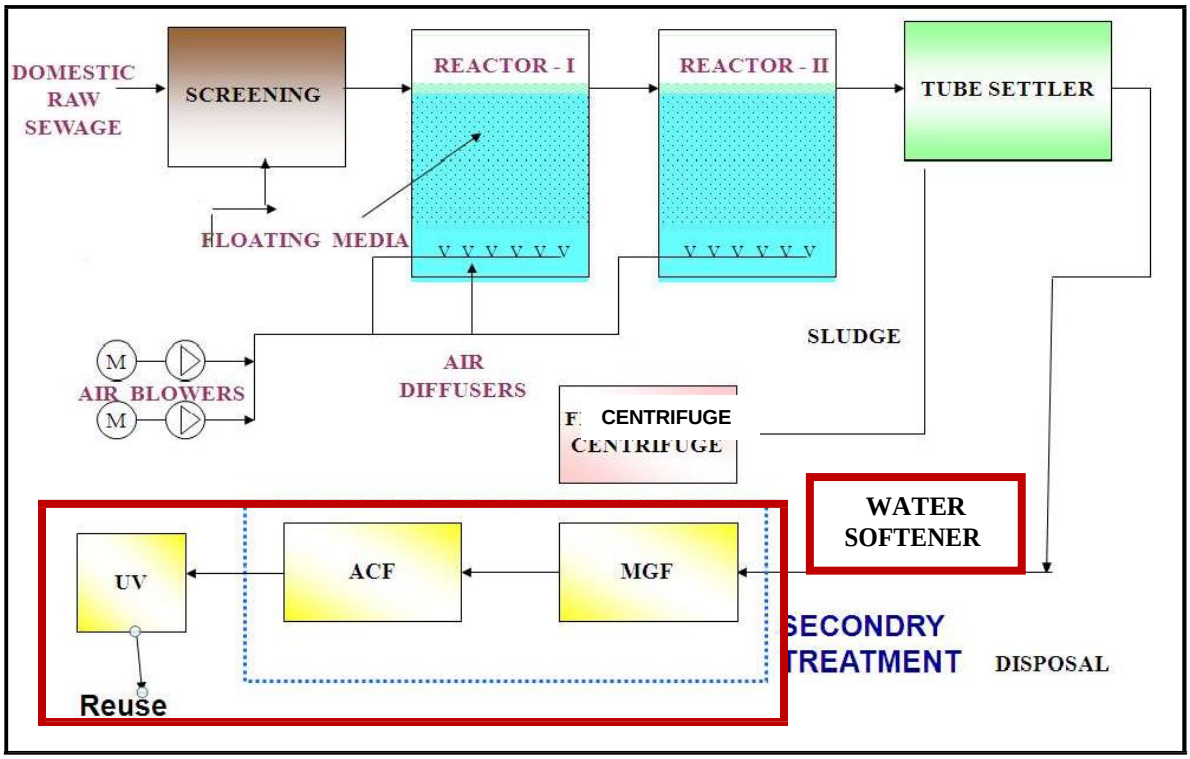

Figure 4: Schematic Diagram of STP

RAIN WATER HARVESTING

The storm water collection system for the premises shall be self-sufficient to avoid any collection/stagnation and flooding of water. The amount of storm water run-off depends upon many factors such as intensity and duration of precipitation, characteristics of the tributary area and the time required for such flow to reach the drains. The drains shall be located near the carriage way along either side of the roads. Taking the advantage of road camber, the rainfall run off from roads shall flow towards the drains. Storm water from various plots/shall be connected to adjacent drain by a pipe through catch basins. Therefore, it has been calculated to provide 2 rainwater harvesting pits at selected locations, which will catch the maximum run-off from the site.

1) Since the existing topography is congenial to surface disposal, a network of storm water pipe drains is planned adjacent to roads. All building roof water will be brought down through rain water pipes.
2) Proposed storm water system consists of pipe drain, catch basins and seepage pits at regular intervals for rain water harvesting and ground water recharging.
3) The peak hourly rainfall of 45 mm/hr shall be considered for designing the storm water drainage system.

Rain water harvesting has been catered to and designed as per the guideline of CGWA. Peak hourly rainfall has been considered as 45 mm/hr. The recharge pit of 3 m diameter and 3.5 m depth is constructed for recharging the water. Inside the recharge pit, a recharge bore is constructed having adequate diameter and depth. The bottom of the recharge structure will be kept 5 m above this level. At the bottom of the recharge well, a filter media is provided to avoid choking of the recharge bore. Design specifications of the rain water harvesting plan are as follows:

- Catchments/roofs would be accessible for regular cleaning.
- The roof will have smooth, hard and dense surface which is less likely to be damaged allowing release of material into the water. Roof painting has been avoided since most paints contain toxic substances and may peel off.
- All gutter ends will be fitted with a wire mesh screen and a first flush device would be installed. Most of the debris carried by the water from the rooftop like leaves, plastic bags and paper pieces will get arrested by the mesh at the terrace outlet and to prevent contamination by ensuring that the runoff from the first 15 minutes of rainfall is flushed off.
- No sewage or wastewater would be admitted into the system.
- No wastewater from areas likely to have oil, grease, or other pollutants has been connected to the system.

Calculations for storm water load:

Plot Area = 6,852.64 m^2

Roof-top area = Ground Coverage = 2,411.94 m^2

Green Area = 1,584.59 m^2

Paved Area = Total Plot Area – (Ground Coverage + Green Area)

= 6,852.64 – (2,411.94 + 1,584.59)

= 2,856.11 m^2

Run-off Load.

Roof-top Area = 2,411.94 x 0.045 x 0.9

= 97.68 m^3/hr.

Green Area = 1,584.59 × 0.045 × 0.2

= 14.26 m^3/hr.

Paved Area = 2,856.11 × 0.045 × 0.7

= 89.96 m^3/hr.

Total Runoff Load = 97.68 + 14.26 + 89.96

= 201.9 m^3/hr.

Taking 15 minutes retention time, volume of storm water = 201.9/4 = 50.47 m^3

Capacity of Recharge pit = $\pi r^2 h$ = 3.14 × 1.5 × 1.5 × 3.5 = 24.72 m^3

Hence No. of pits required = 50.47/24.72 = **2.04** pits say **2** Pits

Total of 2 Rain Water Harvesting pits are proposed for artificial ground water recharge.

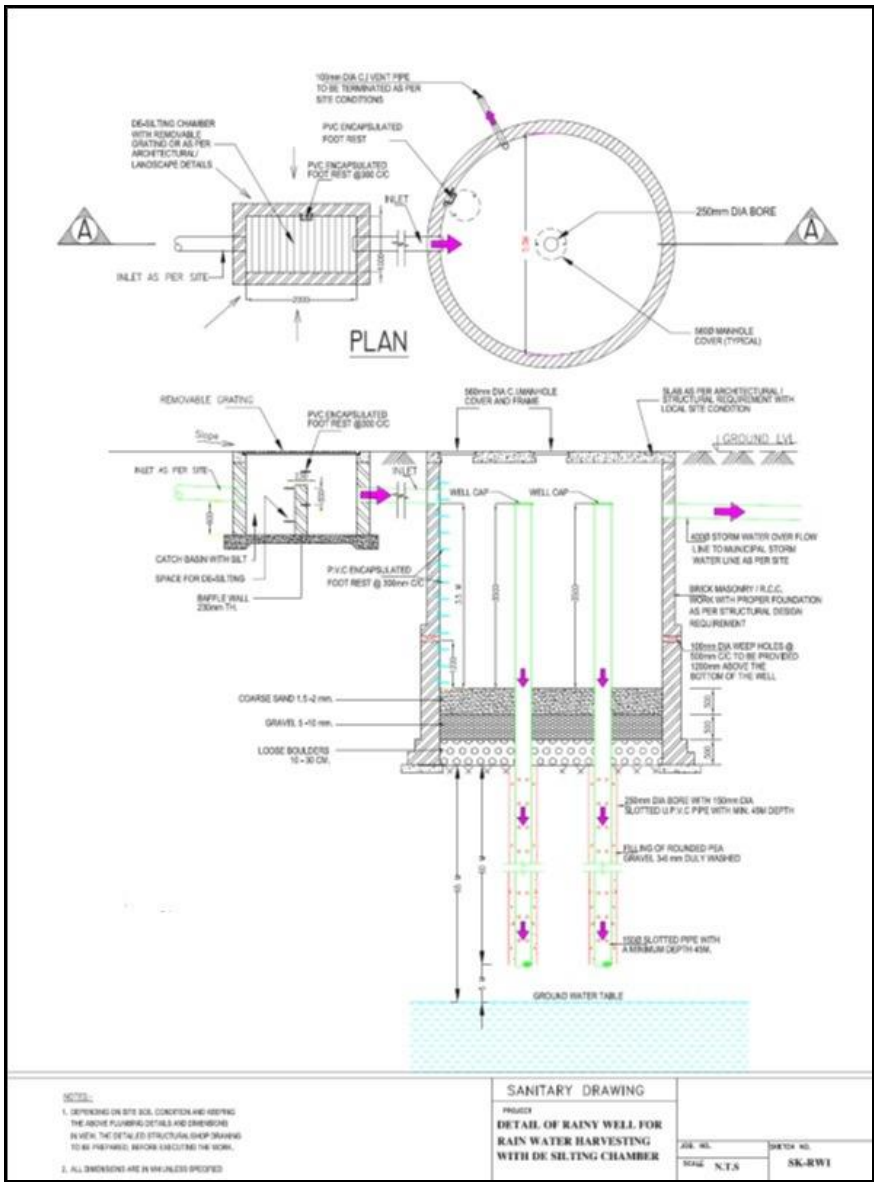

Figure 5: Rain Water Harvesting Pit.

PARKING FACILITIES

Adequate provision will be made for the heavy vehicle parking at the project site to allow smooth movement at the site.

PARKING REQUIRED -

As per MoEFCC Norms:

1.) For Hospital Block = 1 ECS / 2 beds

= 400/2

= 200 ECS

Total parking required as per MoEFCC norms = **200 ECS**

As per DDA Bye-laws:

1.) For Hospital Block (Existing) = 1.33 ECS / 100 m2 FAR

= 8,276.064/100 x 1.33

= 110 ECS

2.) For Hospital Block (Proposed) = 2 ECS/100 m2 FAR

= 10,795.22/100 x 2

= 216 ECS

Total parking required as per DDA bye laws = **326 ECS**

PARKING PROPOSED –

PARKING CALCULATION	**TOTAL AREA (SQ.M)**	**ECS ACHIEVED**
BASEMENT 2 (2 STACK Automated PARKING)	1371.47	86 ECS

(AREA/32*2)		
BASEMENT 3 (3 STACK Automated PARKING) (AREA/32*3)	1452.28	136 ECS
SURFACE PARKING (AREA/23)	1238	54 ECS
Automatic parking system (2 blocks)		51 ECS
TOTAL NO. OF ACHIEVED PARKING		**327**

Total parking provided **= 327 ECS**

POWER REQUIREMENT

The power is being supplied by TATA POWER-DDL. The total connected load for the project after expansion will be 1,366 kW.

POWETR BACK UP

There will be provision of 3 DG sets of total capacity (2 x 1250 + 1 x 500 KVA) with 3,000 KVA for power back up.

SOLID WASTE GENERATION

Solid waste would be generated both during the construction phase. The solid waste expected to be generated during the construction phase will comprise of excavated materials, used bags,bricks, concrete, MS rods, tiles, wood etc. The following steps are proposed to be followed for the management solid waste:

- Construction yards are proposed for storage of construction materials.
- Remaining soil shall be utilized for refilling / road work / rising of site level at locations/ selling to outside agency for construction of roads etc.

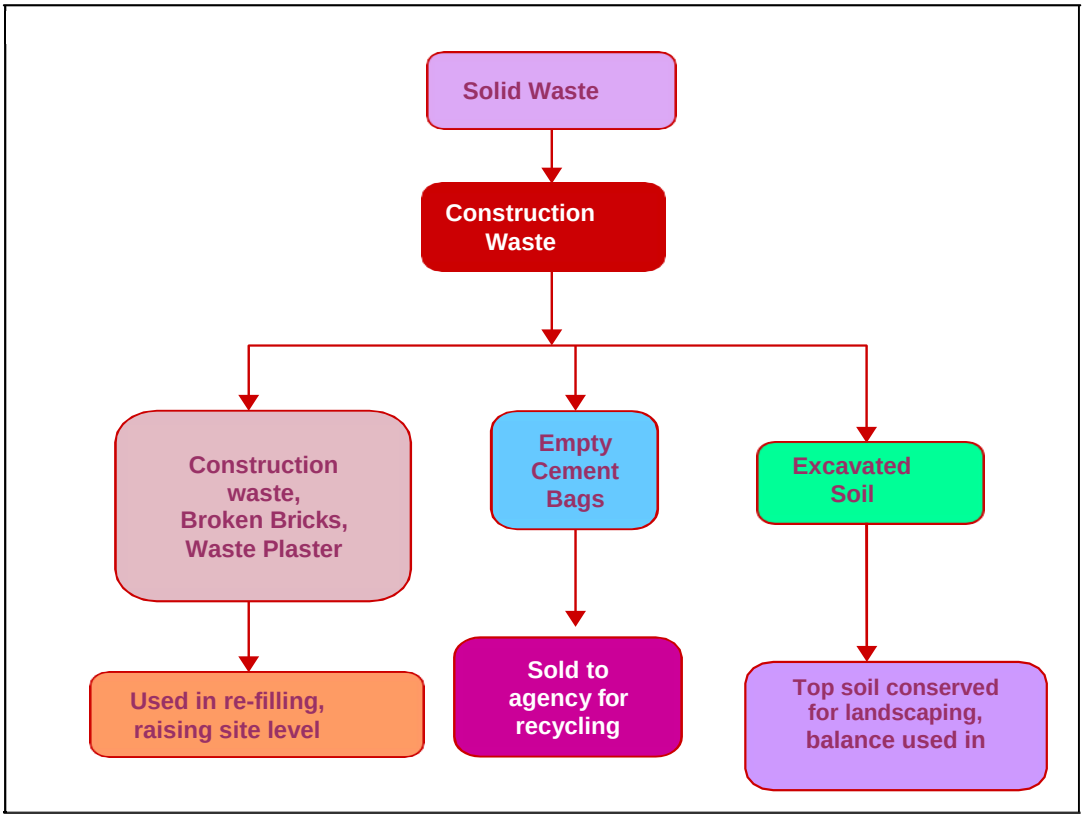

Figure 6 (a): Solid Waste Management Scheme (Construction Phase)

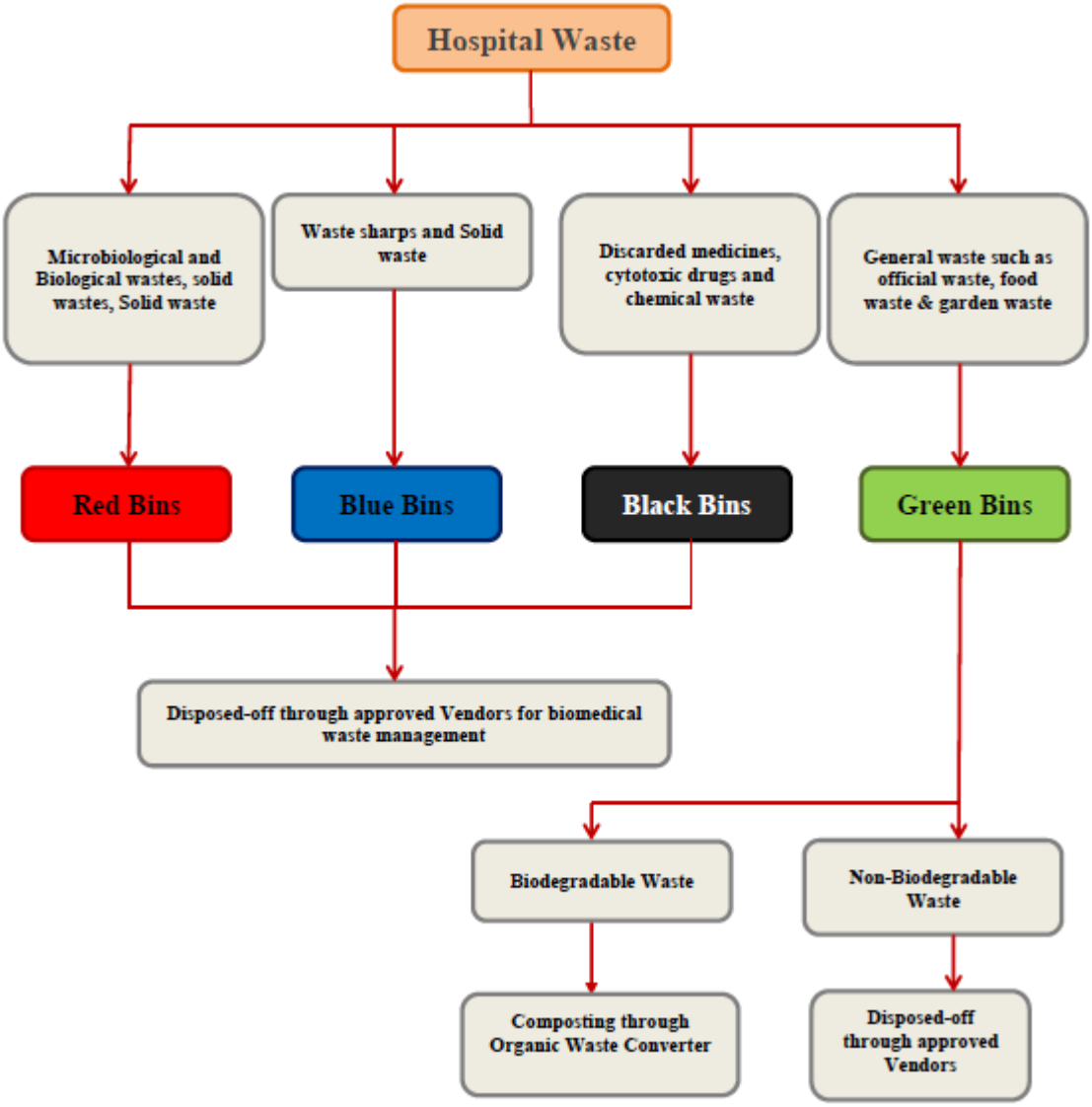

Figure 6 (b): Solid Waste Management Scheme (Operation Phase)

The solid waste generated during operation phase of the project shall be approx. 1,117 kg/day Inpatients, @ 0.5 kg per capita per day for staff and @ 0.15 kg/day for outpatients, ETP sludge and STP sludge). It is estimated that there will be a Bio medical waste generation of approx. 279 kg/day. Following arrangements will be made at the site in accordance to Municipal Solid Waste (Management and Handling) Rules, 2016 and Bio-Medical Waste (Management and Handling) Rules, 1998.

Table 8: Calculation of Total Solid Waste Generation

S. No.	Category	Waste (Kg/capita/day)	Waste generated (kg/day)
1.	Inpatients*	400 @ 1.5 kg/bed/day	600
2.	Staff (Doctors + Visitors)	1314 @ 0.25 kg/day	326
3.	Out-Patients	1000 @ 0.15 kg/day	150
4.	Landscape waste (0.39 acre)	@0.2 kg/acre/day	1
	Total Municipal (domestic) Waste		**1,077 kg/day**
5.	STP Sludge		26
6.	ETP Sludge		14
	Total Solid Waste		**1,117 kg/day**
	*Bio-Medical waste	@ 25% of the waste generated/bed	**279 kg/day**

**As per the Bio-medical waste (Management and Handling) Rules, 2016.*

- **Collection and Segregation of Waste**

For Hospital waste collection, adequate numbers of colored bins (Red, Yellow, Black, Blue and dark blue bins) are proposed to be provided at the strategic locations of the Hospital area.

Red bins: For the disposal of IV tubings, plastic bottles, syringes without needles, drainage tubes, catheters, locally autoclaved microbiological waste.

Yellow bins: For the disposal of anatomical parts, amputated body parts, placenta. Items contaminated with blood, and body fluids including cotton, dressings, soiled plaster casts, lines, bedding, other material contaminated with blood.

Black bins: For the discard of paper, wrappers, tissue and other general items.

Blue bins: For the disposal of glass bottles, ampoules, broken glass, vials, other glass items.

Dark Blue bins: For the disposal of sharps. Does not contain disinfectant. Includes needles, stillet, lancets and blades.

- **Treatment of Waste**

➢ Biodegradable Waste

Bio-degradable waste will be treated onsite through an approved Vendor in accordance with the Bio-Medical Waste (Management and Handling) Rules, 2016.

➢ Recyclable waste

Grass Recycling The cropped grass will be spread on the green area. It will act as manure after decomposition.

Recyclable wastes like paper, plastic, metals etc. will be sold off to recyclers.

- **Disposal**

Recyclable and non-recyclable waste will be disposed through Govt. approved agency.

ORGANIC WASTE CONVERTER

A waste converter is a machine used for the treatment and recycling of solid and liquid refuse material. A converter is a self-contained system capable of performing the following functions: pasteurization of organic waste; sterilization of pathogenic or biohazard waste; grinding and pulverization of refuse into unrecognizable output; trash compaction; dehydration.

Benefits of organic waste converter:

1. Large quantity of solid waste is converted to manure in a very short period
2. This manure can be sold as compost to farmers, or used for gardening
3. Machine requires less space and the efficiency is high
4. Manpower and maintenance is very less
5. This is one of the latest techniques of managing solid waste.

Use of Organic waste converter:

A typical Organic Waste Converter - 300 (Dim. 3m × 4m) is used for composting waste 120 kg/batch or 3,000 kg/day & it requires electricity of about 13.5 HP.

No. of batches /day = 3,000/120 = 25

No. of batches to convert 335.1 kg = 335.1/120 = 2.79 say 3

Operation Cost-monthly per capita:

The operating cost of OWC - 300 = 1, 80,000 INR/month

Cost/day = 1,80,000/30

= 6000/-

1 batch/day cost = 6000/25

= 240 INR

Cost for 3 batch/day = 3 × 240/-

= 720/-

Monthly operating cost = 30 × 720

= 21,600 /-

Total population of the project = 3,454

Per capita cost/month = Monthly operating cost/Total population of the project (i.e. 3,454)

= 21,600/ 3,454

= 6.25 **say 6 INR**

Area proposed for the OWC = 12 Sq.m

GREEN AREA

Total green area measures 1,584.59 m^2 i.e. 23.12% of the plot area (Shelter belt, Avenue plantation and lawn). Evergreen tall and ornamental trees like *Grevillea robusta, Cassia fistula, Bauhinia varieagata,* etc. have been proposed to be planted inside the premises.

DETAIL OF CONSTRUCTION MATERIAL

List of building materials being used at site:

1. Coarse sand

2. Fine sand
3. Stone aggregate
4. Stone for masonry work
5. Cement
6. Reinforcement steel
7. Pipe scaffolding (cup lock system)
8. CLC fly ash blocks
9. P.V.C. conduit
10. MDS, MCBs
11. PVC overhead water tanks
12. 2 1/2'' thick red colour paver tiles
13. PPR (ISI marked)
14. PVC sullage lines
15. S.W. sewer line up to main sewer
16. PVC rain water down take
17. Stainless steel sink in kitchen
18. Joinery hardware- ISI marked

MATERIALS USED FOR CONSTRUCTION & THEIR U VALUE

Type of Construction	U values(in W/m2 deg C)
WALLS:	
Brick:	
Plastered both sides - 114 mm	3.24
Solid , Unplastered - 228 mm	2.67
Plastered both sides - 228 mm	2.44
Concrete,ordinary,Dense:	
- 152 mm	3.58
- 203 mm	3.18
Concrete block, cavity,250 mm (100+50+100), outside rendered,inside plastered:	
Aerated Concrete blocks	1.19
Hollow Concrete block, 228 mm,single skin,outside rendered, inside plastered:	
Aerated Concrete blocks	1.70
Roofs Pitched :	
Tiles or Slates on boarding and felt with plaster ceiling.	1.70
Roofs Flat :	
Reinfoced concrete slab, 100 mm, screed 63-12 mm, 3 layers bituminous felt.	3.35
Floors :	
Concrete on ground or hardcore fill	1.13
+ Grano,Terrazzo or tile finish	1.13
+ Wood block finish	0.85
WINDOWS :	
Exposure South , Sheltered:	
Single glazing	3.97
Double glazing 6 mm space	2.67

LIST OF MACHINERY USED DURING CONSTRUCTION

(i) Dumper

(ii) Concrete mixer with hopper

(iii) Excavator

(iv) Concrete Batching Plant

(v) Cranes

(vi) Road roller

(vii) Bulldozer

(viii) RMC Plant

(ix) Tower Cranes

(x) Hoist

(xi) Labor Lifts

(xii) Pile Boring Machines

(xiii) Concrete pressure pumps

(xiv) Mobile transit mixer

----------x----------