

ENCLOSURE 1. FORM 1A

FORM 1A

CHECK LIST OF ENVIRONMENTAL IMPACTS

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

I. LAND ENVIRONMENT

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

1.1	<p>Will the existing landuse get significantly altered from the project that is not consistent with the surroundings? (Proposed landuse must conform to the approved Master Plan / Development Plan of the area. Change of landuse if any and the statutory approval from the competent authority be submitted). Attach Maps of</p> <p>(i) Site location</p> <p>(ii) Surrounding features of the proposed site (within 500 meters)</p> <p>(iii) The site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.</p>	<p>At present the land is a vacant land. The proposed project site is located at TS. no: 1/ 5 and 1/ 9, block no: 7, Village- Thiruvanmiyur, Taluk- Mylapore-Triplicane, Chennai. ts. no: 3, 2b, and 2c, Village-Kottivakkam, Taluk -Tambaram, District-Kanchipuram.</p> <p>Presently, the land is a vacant land. The land has been taken on lease from government of Tamilnadu by M/S DLF Info Park developers (Chennai) Limited for development of IT park. The development shall confirm to the master plan of the Chennai. Hence, the land use will change from Vacant land to IT park.</p> <p>The site location shown on Google Map is given in Pre- Feasibility Report.</p> <p>Map showing vicinity around the site is given in Pre- Feasibility Report.</p> <p>Layout plan is enclosed as Enclosure.</p>
1.2	<p>List out all the major project requirements in terms of the Land area,</p> <p>Total Built up area</p> <p>Water consumption</p> <p>Power requirement</p> <p>Connectivity</p>	<p>Total Plot area = 108981.84 Sq. m (26.93 Acre)</p> <p>835650.00 Sq. m</p> <p>4335 KLD</p> <p>26359 KW (for Phase I-8172 KW & Phase II- 18187 KW)</p> <p>NH 45- 5.57 km NWW</p>

	Community facilities Parking needs etc.	None Parking Required – 6586 ECS Parking Provision – 6586 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 landuse, and disturbance to the local ecology).	The entire project influenced area will be developed as per the provision of Master Pan, thus no induced development is foreseen due to the proposed project. Also, the proposed development shall be carried out as per the defined building by-laws; hence no impact is envisaged due to proposed development. Construction phase as well as operation Phase of the project, will generate direct and indirect employment opportunities for a large section of society. The employment will have positive impact
1.4	Will there be any significant land disturbance resulting in erosion, subsidence & instability? (Details of soil type, slope analysis, vulnerability to subsidence, seismicity etc. may be given).	No such significant land disturbance will result. However, care will be taken so that no erosion, subsidence & instability takes place. Soil Type: Silt Loam Slope Analysis: The project area possesses fairly plain terrain. Erosion / Subsidence: Proper greening & paving of area will not cause any soil erosion problem and subsidence. Seismicity: The area under study falls in Seismic zone-III according to the Indian Standard Seismic Map. Suitable seismic coefficients in horizontal and vertical directions respectively, will be adopted while designing the structure.
1.5	Will the proposal involve alteration of natural drainage systems? (Give details on a contour map showing the natural drainage near the proposed project site)	The proposed project activities will not cause any alteration of natural drainage system.

1.6	<p>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.)</p>	<p>During construction phase, 729200 cu m of soil shall be excavated in order to provide foundation and shall be used for levelling & backfilling purpose. This excavated soil shall be properly stacked within site under tarpaulin cover and will be reused for back filling purposes. The top soil will be preserved for landscaping purpose only. Hence, no adverse impacts on the land environment are envisaged.</p>
1.7	<p>Give details regarding water supply, waste handling etc. during the construction period.</p>	<p>Water Supply: During Construction stage, water will be sourced through nearby STP for construction activities & will be further treated onsite before use. Drinking water during construction phase will be fulfilled through tanker supplier.</p> <p>Waste Generation / Handling: Spillage of oil from the machinery or cement residual from concrete mixer plants will be properly collected and reused in construction site. For construction labour, proper sanitary facilities & wash areas will be constructed such as mobile toilets and good hygienic conditions will be maintained.</p>
1.8	<p>Will the low-lying areas & wetlands get altered? (Provide details of how low lying and wetlands are getting modified from the proposed activity)</p>	<p>No low lying and wetlands area are present in and around the project site.</p>
1.9	<p>Whether construction debris & waste during construction cause health hazard? (Give quantities of various types of wastes generated during construction including the construction labour and the means of disposal)</p>	<p>The construction waste generated from the project site will be common in nature and will not cause any health hazard to associate and nearby population. The construction debris will be used for land levelling /back filling. Waste concrete will be reused as aggregate in construction process. The rest of the construction debris shall be sent to C & D facility. Mobile toilets & drinking water for construction labour shall be provided.</p>

2. WATER ENVIRONMENT

<p>2.1</p>	<p>Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement.</p>	<p>The total quantity of water requirement shall be 4335 KLD & shall be met by Chennai Municipal Supply.</p> <p>Domestic : 1016 KLD Flushing : 841 KLD Gardening : 160 KLD HVAC cooling : 2268 KLD Miscellaneous : 50 KLD</p> <hr/> <p>Total Water Requirement : 4335 KLD Fresh water : 2331 KLD Treated Water Reuse : 2004 KLD</p>
<p>2.2</p>	<p>What is the capacity (dependable flow or yield) of the proposed source of water?</p>	<p>Chennai Municipal Corporation will supply water to the project and it is a dependable source of water.</p>
<p>2.3</p>	<p>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)</p>	<p>In case Chennai Municipal Corporation supply is not made or the supply made is inadequate then the water complying with IS – 10500 shall be arranged.</p>
<p>2.4</p>	<p>How much of the water requirement can be met from the recycling of treated wastewater? (Give the details of quantities, sources and usage)</p>	<p>Total waste water of 2225 KLD shall be generated from the proposed project which shall be treated in S.T.P of combined capacity 4200 KLD (for Phase I- 1500 KLD and Phase II- 2700 KLD) out of which 2004 KLD treated water shall be reused in flushing, gardening, HVAC Cooling, Misc. purposes within the project premises. Approx. 46.22% of total water requirement will be met by recycled water.</p>
<p>2.5</p>	<p>Will there be diversion of water from other users? (Please assess the impacts of the project on other existing uses and quantities of consumption)</p>	<p>There will not be any substantial effect on water demand of this region as the development will be done as per the development plan of the area.</p>

2.6	<p>What is the incremental pollution load from wastewater generated from the proposed activity?</p> <p>(Give details of the quantities and composition of wastewater generated from the proposed activity)</p>	<p>Total waste water of 2225 KLD shall be generated from the proposed project which shall be treated in S.T.P of combined capacity 4200 KLD (for Phase I- 1500 KLD and Phase II- 2700 KLD) out of which 2004 KLD treated water shall be reused in flushing, gardening, HVAC Cooling, Misc. purposes within the project premises. It will zero discharge complex.</p>
2.7	<p>Give details of the water requirements met from water harvesting? Furnish details of the facilities created.</p>	<p>19 Nos. of Rain Water Harvesting Tank shall be provided. (Details of Rain Water Harvesting pit are given in Pre-Feasibility Report).</p>
2.8	<p>What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics (quantitative as well as qualitative) of the area in the post construction phase on a long-term basis?</p> <p>Would it aggravate the problems of flooding or water logging in any way?</p>	<p>After construction of IT Park; the rain water will be properly collected & will be treated & reused.</p> <p>No, it will not aggravate the problem of flooding or water logging in any way, rather will reduce the same.</p>
2.9	<p>What are the impacts of the proposal on the ground water?</p> <p>(Will there be tapping of ground water; give the details of ground water table, recharging capacity, and approvals obtained from competent authority, if any)</p>	<p>There will be no ground water extraction, however ground water recharging is proposed through rain water harvesting, so, there will be positive impact on ground water levels.</p>

2.10	<p>What precautions/measures are taken to prevent the runoff from construction activities polluting land & aquifers? (Give details of quantities and the measures taken to avoid the adverse impacts)</p>	<p>During the construction phase, runoff from the construction site shall not be allowed into the roadside. It will be collected in a tank & after pre-treatment it will be reused for sprinkling, etc.</p>
2.11	<p>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)</p>	<p>During construction phase, Adequate measures shall be taken to channelize such storm water and the same shall be collected in a tank & after pre-treatment it will be reused for sprinkling etc. During operation phase Storm water will be channelized to 19 no. of rainwater collection tank proposed within the project site.</p>
2.12	<p>Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)</p>	<p>2 KLD of waste water will be discharged. Mobile toilets will be provided for labourers during construction period.</p>
2.13	<p>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)</p>	<p>Total water requirement of labour during construction phase will 7 KLD. 5 KLD waste water will be discharged during construction phase from labours. It shall be discharged into septic tanks followed by soak pit. During operation phase, 2225 KLD of waste water will be treated in the proposed S.T.P. of combined capacity 4200 KLD (for Phase I- 1500 KLD and Phase II- 2700 KLD) based on MBBR technology. Treated water of 2004 KLD treated water shall be reused in flushing, gardening, HVAC Cooling, Misc. purposes within the project premises. It will zero discharge complex.</p>
2.14	<p>Give details of dual plumbing system if treated waste used is used for flushing of toilets or any other use.</p>	<p>Dual Plumbing line will be provided in the IT park for reuse of treated water.</p>

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)	<p>Core Zone: No vegetation exists at site except few bushes and grasses which will be cleared at the time of construction.</p> <p>Buffer Zone: The following species were found in the buffer zone.</p> <table border="1" data-bbox="762 483 1342 779"> <tr> <td>Kachnar</td> <td>Mango</td> <td>Gulmohar</td> </tr> <tr> <td>Ashok</td> <td>Bottle Brush</td> <td>Kadam</td> </tr> <tr> <td>Neem</td> <td>Imli</td> <td>Amaltas</td> </tr> <tr> <td>Palm</td> <td>Babool</td> <td>Kikar</td> </tr> </table>	Kachnar	Mango	Gulmohar	Ashok	Bottle Brush	Kadam	Neem	Imli	Amaltas	Palm	Babool	Kikar
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3.2	Will the construction involve extensive clearing or modification of vegetation? (Provide a detailed account of the trees & vegetation affected by the project)	No vegetation exists at site except few bushes and grasses which will be cleared at the time of construction.												
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)	<p>There will not be any kind of impact of this project on site features.</p> <p>The Shelter belt for the proposed project has been planned to provide a clean, healthy and beautiful green environment for the people to live in within the proposed project site.</p> <p>To minimize the impact, the provision of plantation area of 29801.62 sq m area (28%), with lawns, ornamental plants and trees shall be provided.</p>												

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.	<p>Core Zone: The proposed site is an open land and this place is not the habitat for local fauna. There will not be any type of displacement or any other effect on the local fauna due to proposed project activities.</p> <p>Buffer Zone: There are no wild life sanctuaries within 10 km radius of the project site.</p>
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4.2	Any direct or indirect impacts on the avifauna of the area? Provide details.	As there is no distinct plantation at site, hence no avifauna exist at site hence, however, proper landscaping has been planned to provide a clean, healthy and beautiful green environment for the population. Common native variety of trees and ornamental flowering species will be planted in the green space which will attract avifauna & hence will have direct positive impact on the local avifauna & this will provide shelter to local birds.
4.3	Prescribe measures such as corridors, fish ladders etc. to mitigate adverse impacts on fauna.	Not applicable

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 constructions)	The traffic will increase due to operation of IT Park project. Increased traffic generation of vehicles due to project will not cause significant increase in atmospheric concentration of gases and do not result in heat island formation. Tree plantation in the IT Park will be provided such that the impact of air pollution shall be minimized. DG sets of capacity 20 x 2000 KVA (Phase I- 6 x 2000 KVA & Phase II- 14 x 2000 KVA) shall be installed within the IT Park project which will be operated during power failure only.
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.	No dust, odour will be generated at site. Smoke will be generated from the operation of DG sets. Proper emission standards will be maintained as per CPCB guidelines.
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	The optimum parking provision is proposed in the basement, podium & surface area. Hence there will be no shortage of parking space for vehicles. Total parking provision within the project shall be 6586 ECS.

	management at the entry & exit to the project site.	
5.4	Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, footpaths etc., with areas under each category.	Maximum capacity of parking shall be provided on surface, podium and basement. A proper route shall be provided for the traffic movement as well as pedestrian movement.

6. AESTHETICS

6.1	Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?	The open land does not have any scenic amenity or beauty. Construction of IT Park will increase the beauty of the area by having proper landscaping. Yes, all considerations have been taken by the proponents.
6.2	Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account?	Presently, the land is a vacant land, so there is no existing structure and therefore no adverse effects are foreseen.
6.3	Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out. 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.	There are no typical urban form & urban design influencing the design criteria. No, there is no anthropological or archaeological site or artifacts near the site. All significant features have been considered.

7. SOCIO-ECONOMIC ASPECTS

7.1	Will the proposal result in any changes to the demographic structure of local population? Provide the details.	The proposed project is an IT Park & thus there will be influx of population in the form of staffs & visitors. Thus, there will be some change in the demographic structure of the area.
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7.2	Give details of the existing social infrastructure around the proposed project.	<p>Hospital</p> <p>Mosjos Health care research foundation 0.87 Km W</p> <p>G.S. Hospital 1.23 Km NNE</p> <p>Star Clinic 0.99 km NEE</p> <p>TTK Hospital 1.20 Km NE</p> <p>Post Office</p> <p>Taranami Post Office</p> <p>Thiruvanmiyur Post Office 0.36 Km NNW</p> <p>India Post 0.73 Km E</p> <p>Places of worship</p> <p>Arulmigu Temple 2.16 Km NNE</p> <p>Mosque in Mahatma Gandhi nagar 1.31 Km E</p> <p>0.81 Km SWW</p> <p>School/College</p> <p>IIT Madras 1.57 Km NW</p> <p>Indian School of science and management 2.53 Km SW</p> <p>Dr Dharmambal state polytechnic 1.08 Km N</p> <p>NIFT chennai 0.39 km E</p> <p>Bank/Atm</p> <p>ICICI Bank ATM 1.23 Km NWW</p> <p>State bank Velachery branch 1.29 Km SWW</p>	
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7.3	Will the project cause adverse effects on local communities, disturbance to sacred sites or other cultural values? What are the safeguards proposed?	The proposed project IT Park will be constructed within the designated site as per the defined building by-laws of government authority. There is no sacred site or cultural heritage site within vicinity of proposed project; hence no adverse impacts are envisaged.
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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)	The major materials required for construction of the project will be steel, cement, bricks, flooring tiles / stones, sanitary and hardware items, electrical fittings, water, etc. Energy efficient Building material will be used. Details of Energy Conservation measures given in Pre-Feasibility Report.
8.2	Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?	Yes, transportation and handling of material will result in air pollution, noise. Trucks will be used for transportation of construction material. Pollution will be minimized by covering material by the tarpaulin and ensuring PUC certificate of vehicles and good condition silencers. The construction material will be bought by local nearby market thereby transportation will be reduced. For noise, no honking zone will be maintained.
8.3	Are recycled materials used in roads and structures? State the extent of savings achieved?	Yes, Recyclable waste like cement bags, plastic bags etc. will be used in roads. Construction debris like Concrete will be recycled and will be used in parking area and road, brick work wastage will be used for pavements and parking area, Tiles will be used in creating pathways in the landscape area & rest will be sent to the construction & demolition facility.
8.4	Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.	Solid waste will be disposed off as per municipal solid waste management and handling norms. Details of collection, segregation and disposal of the solid waste is given in the Pre- Feasibility Report.

9. ENERGY CONSERVATION

9.1	<p>Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption?</p>	<p>Power Requirement – 26359 KW (Phase I- 8172 KW & Phase II- 18187 KW) Source of Power: Tamil Nadu Electricity Board Back-up Source: D.G. Sets of ultra-low sulphur No. of DG Sets: Proposed: 20 x 2000 KVA (Phase I- 6 x 2000 KVA & Phase II- 14 x 2000 KVA) DG sets shall be bought acoustically enclosed and with silencers. Appropriate energy conservation measures & management plan shall be adopted in order to minimize the consumptions of non-renewable fuel. To Minimize energy consumption following measures shall be adopted.</p> <ol style="list-style-type: none"> 1. We shall provide LED in common areas like corridors, lifts, lobby. 2. Provision of thermal insulation on exposed roofs to reduce air-conditioning load and its power consumption which results in energy saving. 3. Lighting of common area shall be designed as per the day light integration. 4. Energy efficient motors shall be used for water pumping and STP. 5. Transformer will be having efficiencies as per ECBC Norms. 6. Provision of solar lights & Solar water heater shall be provided
9.2	<p>What type of and capacity of power back-up do you plan to provide?</p>	<p>Proposed: 20 x 2000 KVA (Phase I- 6 x 2000 KVA & Phase II- 14 x 2000 KVA) Fuel: Ultra Low sulphur diesel. These shall be installed on surface to provide backup.</p>
9.3	<p>What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short</p>	

	<p>wave and long wave radiation?</p>	<table border="1"> <thead> <tr> <th>S. No</th> <th>BUILDING MATERIAL PROPOSED WITH U & R VALUES</th> <th>'R' Values (in Sq m. Deg C/ Watts)</th> <th>'U' values (in Watts/ Sq m. Deg C)</th> </tr> </thead> <tbody> <tr> <td>1.</td> <td>Glass (Double reflective glass)</td> <td>0.30</td> <td>3.3</td> </tr> </tbody> </table> <p>Double reflective glass for external facade will be used.</p>	S. No	BUILDING MATERIAL PROPOSED WITH U & R VALUES	'R' Values (in Sq m. Deg C/ Watts)	'U' values (in Watts/ Sq m. Deg C)	1.	Glass (Double reflective glass)	0.30	3.3
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1.	Glass (Double reflective glass)	0.30	3.3							
9.4	<p>What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project.</p>	<p>Building design and envelope is optimized through selection of appropriate wall and roof construction and through adoption of solar measures.</p> <p>Yes, the layout of building has been designed to maximize the potential for use of solar lighting per day devices.</p>								
9.5	<p>Does the layout of streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building? Substantiate with details.</p>	<p>Yes, the layouts of blocks are designed to maximize the potential for use of solar lighting per day devices.</p> <p>solar lights shall be used for street lighting & common areas.</p>								
9.6.	<p>Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected?</p>	<p>Solar measures have been adopted to provide shading devices for windows and roof which would effectively reduce heating up of building envelope. Louvers and sunshades will be used around windows in order to protect from direct sunlight.</p>								

<p>9.7</p>	<p>Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details.</p> <p>Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions?</p> <p>Are you using CFC and HCFC free chillers? Provide specifications</p>	<p>Suitable energy optimization will be adopted during the calculation of energy load of the proposed project. The space heating load will be minimized by using solar structure and suitable buildings envelop material.</p> <p>The diesel generator sets shall be automatically controlled to optimize their usage based on the actual load requirements at any time. Space conditioning will be provided as per norms of National Building Code – Part 8; Building Services Section 3–Mechanical Ventilation. Lighting intensity will be done as per the National Building Code Guidelines.</p> <p>CFC and HCFC free chillers shall be installed.</p>																
<p>9.8</p>	<p>What are the likely effects of the building activity in altering the micro-climates? Provide a self-assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?</p>	<p>No significant effect is envisaged on the surrounding environment of project. Increased traffic generation and use of D.G. Sets in the project will not cause significant increase in atmospheric concentration of gases and will not result in heat island formation.</p>																
<p>9.9</p>	<p>What are the thermal characteristics of the building envelope? (a) roof; (b) external walls; and (c) fenestration? Give details of the material used and the U-values or the R values of the individual components.</p>	<table border="1"> <thead> <tr> <th data-bbox="639 1391 730 1576">S. No</th> <th data-bbox="730 1391 911 1576">BUILDING MATERIAL PROPOSED WITH U & R VALUES</th> <th data-bbox="911 1391 1082 1576">'R' Values (in Sq m. Deg C/ Watts)</th> <th data-bbox="1082 1391 1270 1576">'U' Values (in Watts/ Sq m. Deg C)</th> </tr> </thead> <tbody> <tr> <td data-bbox="639 1576 730 1921">1.</td> <td data-bbox="730 1576 911 1921">Wall Brick & ACC Blocks wall (230 mm thick), both side thick sand cement plaster (12-18mm) with insulation.</td> <td data-bbox="911 1576 1082 1921">2.28</td> <td data-bbox="1082 1576 1270 1921">0.44</td> </tr> <tr> <td data-bbox="639 1921 730 2038">2.</td> <td data-bbox="730 1921 911 2038">Roof 200 mm RCC slab with</td> <td data-bbox="911 1921 1082 2038">2.04</td> <td data-bbox="1082 1921 1270 2038">0.49</td> </tr> </tbody> </table>	S. No	BUILDING MATERIAL PROPOSED WITH U & R VALUES	'R' Values (in Sq m. Deg C/ Watts)	'U' Values (in Watts/ Sq m. Deg C)	1.	Wall Brick & ACC Blocks wall (230 mm thick), both side thick sand cement plaster (12-18mm) with insulation.	2.28	0.44	2.	Roof 200 mm RCC slab with	2.04	0.49				
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			mud phuska & clay tiles with 75 mm insulation.		
		3	Glass (Double reflective glass)	0.30	3.3
9.10	What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans.	<p>The basic system of Fire Fighting shall be designed as per the provisions of the National Building Code 2016</p> <p>Water shall be drawn from fire reserve tanks by electrically driven jockey pumps, fire pumps. A standby diesel engine driven pump for fire hydrant pump shall also be provided. All pumps shall have separate suction line from the fire suction header and delivery shall be connected to the system. Diesel engine driven fire pump shall be of the same capacity and shall back up the electrically operated fire hydrant, as per fire regulations. This will be operated in case of total electrical power or electrical pump failure. Independent jockey pumps (for hydrant line) shall operate intermittently in order to take care of hydraulic losses in the system and shall maintain the minimum pressure respectively in wet risers.</p> <p>FIRE HYDRANTS</p> <p>Fire department connections, capable of directly feeding the ring mains or static fire reserve tanks, shall also be provided near the main entrance. It shall also be provided on the external wall of the property near the main entrance.</p> <p>Internal standpipe fire hydrant system shall be provided with landing valve, hose reel, first aid hose reels, complete with instantaneous pattern short gunmetal pipe.</p> <p>FIRE HOSE CABINETS</p> <p>The hose cabinet to accommodate the Hose Pipes, Branch Pipe, Nozzle and Hydrant Outlets shall be fabricated from</p>			

		<p>2 mm thick or 14 mm gauge aluminium sheet. Internal Hydrants shall accommodate the Hose Reel equipment.</p> <p>The hose cabinet shall be painted red and stove enamelled.</p> <p>EXTINGUISHERS</p> <p>Hand held extinguishers shall be located so that the maximum travel distance is not more than 23 meters and would generally be located in or adjacent to the fire hose reel cabinet.</p> <p>Fire Safety:</p> <p>The building materials shall be of appropriate fire resistance standards. Further, design shall include provisions for the following:</p> <ul style="list-style-type: none"> ◆ The electrical systems shall be provided with automatic circuit breakers activated by the rise of current as well as activated by over current. ◆ Fire detection system. ◆ Fire alarm system at appropriate places. ◆ Means of escape ◆ Access for fireman ◆ Adequate fire-fighting requirement shall be taken into account while designing the electrical distribution system. ◆ Emergency Lighting: ◆ The emergency lights operated on battery power should be provided at appropriate locations such as corridors, common area, staircase, exit and entrance doors, parking etc.
9.11	If you are using glass as wall material provides details and specifications including emissive and thermal characteristics.	All fenestration with U-factors, SHGC, or visible light transmittance determined, certified, and labelled in accordance ISO 15099 shall be adopted.
9.12	What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration.	All the window and door are airtight quality, hence there will be no air infiltration.

9.13	<p>To what extent the non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.</p>	<p>Solar energy will be used within IT Park Street lighting & common area lighting will be on solar power. Solar water heaters shall be provided in at each block. The details of the renewable technologies used will be given in the Pre- Feasibility Report</p>
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10. ENVIRONMENT MANAGEMENT PLAN

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