

FORM - I-A
CHECK LIST OF ENVIRONMENTAL IMPACTS

1. LAND ENVIRONMENT

| | QUERY | REPLY | | | | | | | | | | | | | | | | | | | | |
|--------------------------|--|--|--------------------|-----|-----|-------|-------------|--------------------|-------------|--------------------|----------------------|---------------------|------------------|------------------|--------------------------|----------------|---------------|----------------|--------------|----------------|---------------|----------------|
| 1.1 | Will the existing land use get significantly altered from the project that is not consistent with the surroundings? 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. | <p>The project site is located in Village Bharonjia, Mullanpur and the land for the proposed project confirms to the land use as per the Master Plan. The total land area of the site is 5.005 Acres and the total built up area of the project will be 96292 Sqm which is more than 20000 Sqm. 500 Mtr radius plan is attached.</p> <p>The Site plan showing the building blocks, internal roads, entry exist, parking area, green area and other utilities is attached as Annexure No. 1.</p> | | | | | | | | | | | | | | | | | | | | |
| 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. | <table border="1"> <thead> <tr> <th></th> <th>Old</th> <th>Add</th> <th>Total</th> </tr> </thead> <tbody> <tr> <td>Land</td> <td>5.005 acres</td> <td>----</td> <td>5.005 acres</td> </tr> <tr> <td>Built up area</td> <td>69606.15 sqm</td> <td>26686 sqm</td> <td>96292 sqm</td> </tr> <tr> <td>Water consumption</td> <td>124 kld</td> <td>19 kld</td> <td>143 kld</td> </tr> <tr> <td>Power</td> <td>3975 KW</td> <td>900 KW</td> <td>4875 KW</td> </tr> </tbody> </table> | | Old | Add | Total | Land | 5.005 acres | ---- | 5.005 acres | Built up area | 69606.15 sqm | 26686 sqm | 96292 sqm | Water consumption | 124 kld | 19 kld | 143 kld | Power | 3975 KW | 900 KW | 4875 KW |
| | Old | Add | Total | | | | | | | | | | | | | | | | | | | |
| Land | 5.005 acres | ---- | 5.005 acres | | | | | | | | | | | | | | | | | | | |
| Built up area | 69606.15 sqm | 26686 sqm | 96292 sqm | | | | | | | | | | | | | | | | | | | |
| Water consumption | 124 kld | 19 kld | 143 kld | | | | | | | | | | | | | | | | | | | |
| Power | 3975 KW | 900 KW | 4875 KW | | | | | | | | | | | | | | | | | | | |
| 1.3 | What are the likely impacts of the proposed activity on the existing facilities adjacent to the proposed site? | Due to increase in population there will be some increase in vehicular traffic which is a part of the overall development in the area. | | | | | | | | | | | | | | | | | | | | |
| 1.4 | Will there be any significant land disturbance resulting in erosion, subsidence & instability? | No | | | | | | | | | | | | | | | | | | | | |
| 1.5 | Will the proposal involve alteration of natural drainage systems? (Given details on a contour map showing the natural drainage near the proposed project site) | There will be no obstruction of natural drainage system. | | | | | | | | | | | | | | | | | | | | |
| 1.6 | What are the quantities of earthwork involved in the construction activity cutting, filling, reclamation etc. | The earth work for foundation excavation is involved which will be used in the premises for filling under floor and other area. No extra earth work is required. | | | | | | | | | | | | | | | | | | | | |
| 1.7 | Give details regarding water supply, waste | About 10-15 m³/day water needed | | | | | | | | | | | | | | | | | | | | |

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| | handling etc. during the construction period. | for construction. No waste water to flow outside. |
| 1.8 | Will the low lying areas & wetlands get altered? | No. |
| 1.9 | Whether construction debris & waste during construction cause health hazard? | The solid waste generated during development phase shall mainly consist of soil mixed with stone chipping, Cement mortar residue and wood waste, cardboards and masonry. It will be utilized for filling within the premises under floors and other low lying areas. |

2. WATER ENVIRONMENT

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| 2.1 | Give the total quantity of water requirement for the proposed project with the breakup of requirements for various uses. How will the water requirement met? State the sources & quantities and furnish a water balance statement. | Old | Add | Total |
| | | 104 KLD | 39 KLD | 143 KLD |
| | | For domestic use = 104 m³/day Source: Own Tube well The breakup of water requirement & Water balance is attached. | | |
| 2.2 | What is the capacity of the proposed source of water? | The major source of water for the proposed project will be ground water. The yield expected is about 15 – 20 KL/hour. The flushing & horticulture water requirements will be fulfilled through treated waste water from STP to be installed within the project premises. | | |
| 2.3 | What is the quality of water required, in case, the supply is not from a municipal source? | Potable water quality | | |
| 2.4 | How much of the water requirement can be met from the recycling of treated wastewater? | About 114 m³/day of treated waste water will be used for plantation/ horticulture, flushing & cooling make up purpose within the premises. | | |
| 2.5 | Will there be diversion of water from other users? | No | | |
| 2.6 | What is the incremental pollution load from wastewater generated from the proposed activity? | The treated waste water will be reused for plantation, flushing & cooling make up purpose within the premises | | |
| 2.7 | Give details of the water requirements met from water harvesting? Furnish details of the facilities created. | About 9676 m³/annum of rain water is estimated to be discharged into the ground water through rain water harvesting wells. | | |
| 2.8 | What would be the impact of the land use changes occurring due to the proposed project on the runoff characteristics of the area in the post construction phase on a long term basis? Would it aggravate the | There would be no impact on the land use changes due to the construction of the proposed project. It is proposed to harvest the entire run-off from the site. It is observed that the run off after development will be less than the run off | | |

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| | problems of flooding or water logging in any way? | before the development of the project. |
| 2.9 | What are the impacts of the proposal on the ground water? | The project is in the critical zone as per the CGWA. There will be no significant effect on the ground water as the treated waste water will be utilized for the green area and the Rain water harvesting system will be provided to recharge the ground water. |
| 2.10 | What precautions/measures are taken to prevent the run-off from construction activities polluting land & aquifers? | There will be no run off from the construction activities. Water during construction shall be consumed totally. |
| 2.11 | How is the storm water from within the site managed? | The entire run off will be harvested through rain water harvesting pits. The roof runoff will be recharged directly to the ground. The surface runoff will be properly channelized to the de-silting and oil removal before the recharge. |
| 2.12 | Will the deployment of construction labourers particularly in the peak period lead to unsanitary conditions around the project site. | No. Local labour shall be engaged who will not stay there. Moreover toilets with septic tank will be provided. |
| 2.13 | What on-site facilities are provided for the collection, treatment & safe disposal of sewage? | Sewerage system will be provided for collection of domestic waste water and S.T.P. will be provided for the treatment of the same. A part of treated waste water shall be used for plantation, flushing & cooling make up purpose within the premises. |
| 2.14 | Give details of dual plumbing system if treated waste used is used for flushing of toilets or any other use. | Dual plumbing will be provided. A part of treated waste water shall be used for flushing / plantation & cooling make up purpose within the premises. |

3. VEGETATION

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| 3.1 | Is there any threat of the project on the biodiversity? | No. |
| 3.2 | Will the construction involve extensive clearing or modification of vegetation? | No. |
| 3.3 | What are the measures proposed to be taken to minimize the likely impacts on important site features. | Green belt, parks and landscaping has been provided within the complex. |

4. FAUNA

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| 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. |
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| 4.2 | Any direct or indirect impacts on the avifauna of the area? Provide details. | No. |
| 4.3 | Prescribe measures such as corridors, fish ladders etc. to mitigate adverse impacts on fauna. | Not required |

5. AIR ENVIRONMENT

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| 5.1 | Will the project increase atmospheric concentration of gases & result in heat islands? | No. |
| 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 impact of any type of Air Pollution on Environment from the complex. |
| 5.3 | Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site. | No. It will provide enough parking spaces within the complex. However some increase in traffic on the road outside is expected. |
| 5.4 | Provide details of the movement patterns with internal roads, bicycle tracks, pedestrian pathways, foot paths etc, with areas under each category. | Details given in the Approved Site Plan. |
| 5.5 | Will there be significant increase in traffic noise & vibration? Give details of the sources and the measures proposed for mitigation of the above. | No. NO – HORN signs will be displayed at various places. |
| 5.6 | What will be the impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details. | The D.G. set which would be used for the project will be with sound proof acoustic enclosures and hence there will be not impact to the surroundings. The D.G. set would be attached with proper anti vibration pads to reduce to any vibration impact to the site surrounding. The flue gases from the D.G. set will be vented out through stack of appropriate height as per C.P.C.B. norms to reduce the impacts on air quality around the project site. |

6. AESTHETICS

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| 6.1 | Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents? | No. |
| 6.2 | Will there be any adverse impacts from new constructions on the existing structures? What are the considerations taken into account? | No. |
| 6.3 | Whether there are any local considerations of | The proposed project would be |

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| | urban form & urban design influencing the design criteria? They may be explicitly spelt out. | constructed in conformity with the Local Building rules. |
| 6.4 | Are there any anthropological or archaeological sites or artefacts nearby? State if any other significant features in the vicinity of the proposed site have been considered. | No. |

7. SOCIO ECONOMIC ASPECTS

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| 7.1 | Will the proposal result in any changes to the demographic structure of local population? Provide the details. | There would be no changes to the demographic structure of local population although household jobs for weaker section during operation phase will be generated. |
| 7.2 | Give details of the existing social infrastructure around the proposed project. | The proposed project is located on Chandigarh- Mullanpur Road where a number of other projects like Urban Townships, commercial, hotels are coming. |
| 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 project would not cause any adverse effects on local communities, disturbance to sacred sites or other cultural values because the proposed project is a commercial project. |

8. BUILDING MATERIAL

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| 8.1 | May involve the use of building materials with high-embodied energy. Are the construction materials produced with energy efficient processes? | It is proposed that fly ash, shall be used for mixing with cement there by reducing the consumption of sand. Bricks and tiles made of material with fly ash shall be preferred over ordinary bricks and tiles. Use of readymade concrete made up of fly ash in place of loose earth for filling purposes within the complex shall be encouraged. |
| 8.2 | Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts? | Vehicles will be asked not to blow horn within the area. "NO HORN" signboard will be displayed on the site". Water will be sprinkled on roads to avoid dust. All the vehicles with PUC certificate will be allowed for transportation & handling of material during construction. |
| 8.3 | Are recycled materials used in roads and structures? State the extent of savings achieved? | Yes, about 10%. |

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| 8.4 | Give details of the methods of collection, segregation & disposal of the garbage generated during the operation of the project. | Segregation of solid waste will be done at the source and door to door collection system will be provided. The recyclable solid waste will be sold to the vendors and the organic/ inert waste shall be sent to the designated disposal site. |
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9. ENERGY CONSERVATION

| 9.1 | Give details of the power requirements, source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area? How have you tried to minimize energy consumption? | <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 33%;">Old</th> <th style="width: 33%;">Add</th> <th style="width: 33%;">total</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">3975 KW</td> <td style="text-align: center;">900 KW</td> <td style="text-align: center;">4875 KW</td> </tr> </tbody> </table> <p>About 4875 K.W. to be supplied by PSPCL. Backup power given by the proponent. CFL will be used for saving energy.</p> | Old | Add | total | 3975 KW | 900 KW | 4875 KW |
|----------------|--|---|-----|-----|-------|----------------|---------------|----------------|
| Old | Add | total | | | | | | |
| 3975 KW | 900 KW | 4875 KW | | | | | | |
| 9.2 | What type of, and capacity of, power back-up do you plan to provide? | The project proponent has made provision of D.G. Sets as standby arrangement of electricity. | | | | | | |
| 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 glass used will be low with low emissivity and low U value which will be meeting the specification of ECBC code. | | | | | | |
| 9.4 | What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project. | All the relevant features such as the orientation of the building, shading effect etc has been incorporated | | | | | | |
| 9.5 | Does the layout of streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details. | Due consideration has been given for maximum use of the solar energy while preparations of layout plan. The project proponent shall made provision for solar panel system and solar energy devices will be used for street lighting, emergency lighting in the proposed project. | | | | | | |
| 9.6 | Is shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof? How much energy saving has been effected? | All the relevant features like the orientation of the building, shading effect etc has been incorporated. Bushy and tall trees have been planned along boundary wall and along roads. | | | | | | |
| 9.7 | Do the structures use energy-efficient space conditioning, lighting and mechanical systems? Provide technical details. Provide details of the transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions? Are you using CFC and HCFC free chillers? Provide specifications. | Promoters will use central air conditioning system and Use of compact fluorescent lamps and low voltage lighting, energy efficient D.G sets and other machinery. VARIABLE VOLUME CHILLED WATER PUMPING: | | | | | | |

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| | | <p>Concept: All the air-conditioning equipment are sized for the peak cooling load requirement. However, more than 90% of the time the cooling load is off – peak. Normally, all the time, the chilled water flow remains constant at the peak design value. If the chilled water flow rate is reduced as the cooling load reduces there is an equivalent saving on the pump BHP. This reduction in pump BHP is achieved by using a VFD on pump motor and differential pressure sensors in the piping loop. It is recommended to install full capacity secondary chilled water pumps for the complete project in Phase-I itself.</p> <p>Advantages:</p> <ul style="list-style-type: none"> • Savings in chilled water pumps operating energy as most of the time the pumps will operate at reduced BHP. • As commercial project have a lot of shifting and variable loads, with variable volume pumping and 2-way control valves, chilled water piping can be sized on the diversified block peak load instead of cumulative zone peaks. <ul style="list-style-type: none"> ▪ Chilled water flow across chillers can be balanced at optimal performance rate. <p>VARIABLE FRESH AIR ARRANGEMENT FOR PUBLIC SPACES:</p> <p>Concept: Public spaces e.g. lobbies, restaurants etc. often have widely fluctuating occupancies in these types of projects. If the fresh air intake to serving these spaces is also made to vary with the occupancy, instead of keeping it constant at its</p> |
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| | | <p>maximum value as is done conventionally, the fresh air load on the air-conditioning system will also reduce correspondingly.</p> <p>Advantages:</p> <ul style="list-style-type: none"> • When occupancy is low, the fresh air load on the air-conditioning system is also low, thus, saving on the operating energy. |
| 9.8 | <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 effect?</p> | <p>Building activity certainly alters the microclimate. It alters groundwater regime, affects flora and fauna to some extent, generates pollution and creates heat island effect. Heat island affect will be mitigated through greenbelt development and lawns, by growing creepers on the boundary wall and if possible, by terrace garden. Roof will be insulated by PUF insulation. These all measures are known for reducing heat island effect. Greenbelt development and terrace gardens help to reduce the impact of inversion too. Increase in traffic generation and occasional use of DG sets may result in little increase in atmospheric concentration of gases. In order to bring down the pollution level to its permissible values (as per the directives of pollution Control Board), the project proponent will use only low Sulphur fuel i.e. 0.25% or lower and install an Acoustic Enclosure/ canopy over this D.G. set to achieve minimum 25 dBA insertion loss as per CPCB regulation.</p> |
| 9.9 | <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> | <p>The building is totally air conditioned. The configuration of the building is such that it absorbs minimum heat. The glass used is reflective which also doesn't allow much heat to enter in the building. Architectural features and land scape provided</p> |

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| | | shading to the building surface to prevent transmission of heat to the interior. |
| 9.10 | What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans. | <p>List of equipments proposed for Fire Fighting Measures:-</p> <p>A. The major equipments proposed for Fire Fighting Measures are Main Hydrant Pump, Sprinkler Pump, Diesel Engine Pump, Jockey Pump.</p> <p>B. Capacity of Fire Water Storage Tanks & Number: - It is proposed to have underground Fire Water Storage Tank of 100 KL capacity for fire fighting purposes.</p> <p>C. Fire Detecting Equipments: - The Fire Detecting Equipments would be as per BIS and NBC norms.</p> <p>D. Other Fire Fighting Measures: - The other Fire Fighting Measures proposed includes, an Emergency Control Room, Smoke Detector, Fire Extinguishers at each entry and exit point on each floor, (5 Kg, 10 Kg and 9 Ltr. capacity), Public address system etc. The Fire Fighting Measures are backed by Electrical supply from D.G. sets in case of emergency.</p> |
| 9.11 | If you are using glass as wall material provides details and specifications including emissivity and thermal characteristics. | The glass will be used Low-e glass. Opaque assemblies shall be modeled as having the same heat capacity as the proposed design but with minimum U-factor |
| 9.12 | What is the rate of air infiltration into the building? Provide details of how you are mitigating the effects of infiltration. | Infiltration is the uncontrolled inward air leakage through cracks and crevices in any building element and around windows and doors of a building caused by pressure differences across these elements due to factors such as wind, inside and outside temperature differences, and imbalance between supply and |

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| | | exhaust air systems. Reduced air filtration combined with proper ventilation can not only reduce energy bills but also improve the quality of indoor air. Outdoor air that leaks indoor makes it difficult to maintain comfort and energy efficiency. In addition, air leakage account for 25-40% of the energy used for heating and cooling in a typical house. |
| 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. | <p>The source of non conventional energy in the proposed project is as follows:</p> <p>a. Solar Street Light: - It is also suggested to use solar cell powered street lights within the proposed project site for conservation of electricity.</p> <p>b. Use of LED Lamps: - The project proponent would use LED Lamp which conserves less electricity.</p> <p>c. Lighting: - All buildings of the proposed project is designed with natural ventilation and natural light so that the use of lights during day time can be minimized.</p> |

10. ENVIRONMENT MANAGEMENT PLAN

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| 10.1 | 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. | The detail of the complete Environment Management Plan of the project has been enclosed. |
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Energy saving details

- Solar Light 20 No = 30 KWHD
 - Common area (3000) lights replaced with CFL = 864 KWHD
- Total Saving 30+864= 894 KWHD

Rain Water Calculation

Plot Area = 20255 Sqm
Roof Top Area = 6572 Sqm
Green Area = 3003 Sqm
Paved area = 10681 Sqm

Annual rainfall potential

- 1 Roof -6572-x0.8x0.77 = 4048 cum/year
- 2 green Area - 3003 x 0.3 x 0.77 = 693 cum/year
- 3 Paved Area - 10681 x 0.6 x 0.77 = 4935 cum/year

Total collection/annum = 9676 cum/year

Water requirement

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| Total population | 6526 No | |
| Permanent population | 1500 Nos | |
| Visitors | 5026 Nos | |
| Flow of 5026 | 5026 @ 15 lit./day/person | 75 M ³ /day |
| Flow of 1500 | 1500 permanent @45 lit./day/person | 68 M ³ /day |
| Cooling tower | Make up water | 140 M ³ /day |
| Green Area | 3003 Sqm | 16 M ³ /day |
| Total Water Requirement | | 299 M ³ /day |
| Domestic water required | | 143 M ³ /day |
| Total Flow to STP | (Domestic water) | 114 M ³ /day |