



The Director (IA-III),
Ministry of Environment, Forests & Climate Change,
Indira Paryawaran Bhawan, Jor Bagh Road,
New Delhi-110003.

Dt. 09-05-2017

Proposal No. IA/KL/NCP/63669/2016

**Sub.:- Environment Clearance – Proposed Integrated IT Township Project at
Marthakkara Village and Ollur Village, Thrissur Taluk, Thrissur District,
Kerala – EDS Reply submission – Reg.**

Respected Sir,

This is in reference to our application for obtaining Environment Clearance for our Integrated IT Township Project at Thrissur, Kerala, in this regard, we have submitted the EIA Report prepared on the basis of approved ToR from SEIAA, Kerala and as per the EDS generated by MoEF&CC on 08/05/2017 for submission of Form 1, Form 1A & Conceptual Plan, we hereby submit the required duly filled Form 1, Form 1A & Conceptual Plan for the project for your kind perusal and further processing.

In view of the above submissions, we humbly request you to consider our application and grant the Environment Clearance to our project at the earliest.

Thanking you,

Yours respectfully,

For M/s Malabar Developers Pvt. Ltd.


(SIYAD E.A.)

Director & Authorized Signatory

Encl. :- as above

APPENDIX I

(See paragraph – 6)

FORM 1

(I) Basic Information

| Sr. No. | Item | Details |
|---------|--|---|
| 1. | Name of the project/s | Environment Clearance for Integrated I.T. Township project by M/s Malabar Developers Pvt. Ltd. |
| 2. | S. No. in the schedule | 8 (b) of EIA Notification, 2006. Integrated I.T. township development project with built-up area of 6,72,526 sq. m. |
| 3. | Proposed capacity / area / length / tonnage to be handled/command area/lease area/ number of wells to be drilled | Total Plot Area = 8.17089 ha. (81,708.93 sq.m.) Total Built-up Area = 6,72,526 sq. m. |
| 4. | New/Expansion/Modernization | New |
| 5. | Existing capacity/area etc., | Not applicable |
| 6. | Category of Project i.e. 'A' or 'B' | Category 'B' as per EIA Notification, 2006 and Category 'A' as per MoEF&CC Notification vide No. S.O.3999 dt. 09/12/2016 |
| 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 | Survey Nos. 137/2, 137/1, 137/3, 135/1, 136/1, 133/1, 136, 136/1, 136/1, 136/1, 136/2, 134/2, 146, 147/2, 147/4, 147/3, 147/2, 146, 142/2, 141, 139/3, 139/1, 138/2, 138/1, 153/2, 152/4, 151/3, 150, 145, 144, 148, 152/2, 153/2, 148, 148, 148, 153/2, 152/2, 152/4, 148, 146/1, 149, 152/2, 146/1 (New Re-Survey Nos. 203/28, 203/30, 203/33, 203/34, 203/35, 203/36, 203/37, 203/38, 203/39, 203/40, 203/41, 203/42, 203/44, 204/1, 204/2, 204/4, 204/5, 204/ 8), Ollur Village, Thrissur Corporation, and Survey Nos. 344, 344, 345/3, 334/1, 334/1, 344, 340/3, 340/3, 334/1, 339/1, 340/3, 340/3, 337, 340/3, 343/2, 342/1 (New Re-Survey Nos. 87/1, 87/2, 87/5, 89/11, 89/15, 90/44, 90/45, 90/47, 90/79), Marthakara Village, Puthur Panchayath Thrissur Taluk & District, Kerala |
| | Plot/Survey/Khasra No. | Survey Nos. 137/2, 137/1, 137/3, 135/1, 136/1, 133/1, 136, 136/1, 136/1, 136/1, 136/2, 134/2, 146, 147/2, 147/4, 147/3, 147/2, 146, 142/2, 141, 139/3, 139/1, 138/2, 138/1, 153/2, 152/4, 151/3, 150, 145, 144, 148, 152/2, 153/2, 148, 148, 148, 153/2, 152/2, 152/4, 148, 146/1, 149, 152/2, 146/1 (New Re-Survey Nos. 203/28, 203/30, 203/33, |

| | | |
|-----|---|--|
| | | 203/34, 203/35, 203/36, 203/37, 203/38, 203/39, 203/40, 203/41, 203/42, 203/44, 204/1, 204/2, 204/4, 204/5, 204/ 8), Ollur Village, Thrissur Corporation, and Survey Nos. 344, 344, 345/3, 334/1, 334/1, 344, 340/3, 340/3, 334/1, 339/1, 340/3, 340/3, 337, 340/3, 343/2, 342/1 (New Re-Survey Nos. 87/1, 87/2, 87/5, 89/11, 89/15, 90/44, 90/45, 90/47, 90/79), Marthakara Village |
| | Village | Marthakkara & Ollur Village |
| | Tehsil | Thrissur |
| | District | Thrissur |
| | State | Kerala |
| 10. | Nearest railway station/airport along with distance in Kms | The nearest railway stations (Ullur Railway Station) which is located at about 3.5 km. and Cochin International Airport, Nedumbassery is at about 50 km. away from the project site. |
| 11. | Nearest Town, city, District Headquarters along with distance in Kms | Thrissur City – about 8 km. District Headquarter - Sub Collector Camp Office, Ayyanthole, Thrissur – about 11 km. |
| 12 | Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given) | <u>Village Office Ullur,</u> Near Padavara Road, Christopher Nagar, Ullur, Kerala-680306 Mobile No. 08547614431. <u>Village Office Maruthakkara,</u> Maruthakkara-Puzhampalam Road, Maruthakkara, Thrissur, Kerala-680306. Mobile No. 08547614455. <u>Panchayat Office Puthur,</u> Puthur, Thrissur, Kerala-680014. Ph. 0487-2352443. <u>Municipal Corporation Office Address :-</u> Thrissur Corporation Office, Municipal Office Road, Thrissur, Kerala 680001. Ph. 0487-2423375. |
| 13 | Name of the applicant | M/s Malabar Developers Pvt. Ltd. |
| 14 | Registered Address | M/s Malabar Developers Pvt. Ltd. 41/2299, Ground Floor, Malabar Gate, Ram Mohan Road, Puthiyara P.O., Calicut, Kerala-673004. |
| | Address for correspondence : | Mr. E.A. Siyad, Director & Authorized Signatory M/s Malabar Developers Pvt. Ltd. 41/2299, Ground Floor, Malabar Gate, Ram Mohan Road, Puthiyara P.O., Calicut, Kerala-673004. |
| | Name | Mr. E.A. Siyad |
| | Designation (Owner/Partner/CEO) | Director & Authorized Signatory |
| | Address | M/s Malabar Developers Pvt. Ltd. 41/2299, Ground Floor, Malabar Gate, Ram Mohan Road, Puthiyara P.O., |

| | | |
|-----|---|--|
| | | Calicut, Kerala-673004. |
| | Pin Code | Kerala-673004. |
| | E-Mail | siyad@malabargroup.com |
| | Telephone No. | 0495-4040916 Mobile No. 09447052916 |
| | Fax No. | 0495-4020916 |
| 16 | Details of Alternative Sites examined, if any. Location of these sites should be shown on a topo sheet | Not Applicable Village-District-State 1. 2. |
| 17 | Interlinked Projects | Not applicable |
| 18 | Whether separate application of interlinked projects has been submitted? | Not applicable |
| 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, 2011? | NO NO NO |
| 22 | Whether there is any Government Order / Policy relevant / relating to the site? | YES, Special project under IT policy of Govt. of Kerala. |
| 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.)**

| Sr. 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 | Yes | There will be permanent change in current land use of the project area. The new land use will be for Integrated |

| | | | |
|-----|---|-----|---|
| | use (with respect to local land use plan) | | <p>I.T. township project with processing area, non-processing area & for related activities. The proposed township will be developed in phased manner.</p> <p>During construction phase, average about 300 persons per day will be at site.</p> <p>During operation phase, on full occupancy of proposed I.T. SEZ, the maximum population expected to be about 27,200 persons (fixed & floating). Therefore, there will be increase in the intensity of land use both during construction phase & operation phase.</p> <p><u>Sources:</u> <i>Population is calculated based on NBC norms.</i></p> |
| 1.2 | Clearance of existing land, vegetation and buildings? | Yes | <p>Qualitative & Quantitative ecological assessment of the project site would be carried out. There are different types of trees and different varieties of shrubs, herbs, grass, climbers & old sheds / structures existing at site. For the development of the proposed project, there will be clearance of existing old structures/sheds & some of the existing trees & different varieties of shrubs, herbs, grass, climbers.</p> |
| 1.3 | Creation of new land uses? | Yes | <p>The new land use will be for integrated I.T. township project with processing area & non-processing area and for related activities.</p> |
| 1.4 | Pre-construction investigations e.g. bore houses, soil testing? | Yes | <p>Pre-construction Soil Investigation has been carried out for the site by the agency. As per the soil investigation report, the water table in the project site is encountered at higher level.</p> |
| 1.5 | Construction works? | Yes | <p>Construction of Residential Building, I.T. Office Building, Shopping Mall, Hotel, Convention Centre, Restaurant / food court, Multiplex, Electrical Substation, Rain water collection pond, & other services & related facilities. Internal roads for movement of vehicles, cycle tracks & pedestrian walkways, inside the project site will be constructed.</p> |
| 1.6 | Demolition works? | Yes | <p>There are some old sheds / structures existing at site. For the development of the proposed project, these will be demolished.</p> |
| 1.7 | Temporary sites used for construction works or housing of construction workers? | Yes | <p>A labour colony / camp will be constructed for housing of construction workers within the project site.</p> |

| | | | |
|------|---|-----|--|
| | | | Open land shall be provided temporarily to the contractors as per their requirement for establishing temporary sheds and facilities for accommodating the workmen deployed by them. |
| 1.8 | Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations | Yes | <p>It is proposed to construct integrated township & related buildings within the site.</p> <p>The proposed project development is an integrated I.T. township project which consists of construction of Residential Building, I.T. Office Building, Shopping Mall, Hotel, Convention Centre, Restaurant / foodcourt, Multiplex, Electrical Substation, Rain water collection pond, & other services & related facilities. Internal roads for movement of vehicles, cycle tracks & pedestrian walkways, inside the project site will be constructed.</p> <p>Excavation for pile foundation of structures will be carried out.</p> <p>As per the contour of the project site, there is level difference towards north east to south west side about 4 m. within the site. The proposed development tries to retain the existing topography. However, for the development of buildings and for roads, certain cutting of the area is required and the soil generated due to the cutting will be used for leveling of the site within the project site.</p> |
| 1.9 | Underground works including mining or tunneling? | No | No underground work including mining or tunneling. |
| 1.10 | Reclamation works? | No | There is no reclamation work in the project development |
| 1.11 | Dredging? | No | No dredging work is required in the project development. |
| 1.12 | Offshore structures? | No | No offshore structure is required in the project development. |
| 1.13 | Production and manufacturing processes? | No | No production / manufacturing process involved in the project development. |
| 1.14 | Facilities for storage of goods or materials? | Yes | As mentioned the proposed project is an integrated I.T. township development along with related activities, Separate raw material storage of cement and other construction materials will be made within the project premises. Bricks and steel will be stacked in open within the site. For the infrastructure developmental works, the construction materials required will be stored within the common area. |
| 1.15 | Facilities for treatment or disposal of solid waste or liquid | Yes | <p>Construction phase :-</p> <p>Municipal solid waste generation from</p> |

| | | |
|--|------------|---|
| | effluents? | <p>the project site including the labour colony during construction phase will be about 60 Kg/day and domestic sewage would be about 17 KLD. The non-biodegradable waste and other packaging material would be sold to the vendors. The bio-degradable solid waste would be disposed in a bio-gas generation plant and the bio-gas generation would be utilized in the labour colony. A sewage treatment plant (STP) for the treatment of domestic sewage from the labour colony.</p> <p>Operation phase :- Solid waste generation will be about 5.30 Tons / day on full occupancy of the township. The municipal solid waste segregation would be achieved at source by providing colour coded bins. The segregated municipal solid waste will be collected separately as Bio-degradable and Non-biodegradable waste as per the MSW Rules, 2000. The non-biodegradable and recyclable waste would be collected through waste collection centre and which would be sold to the vendors. The biodegradable waste along with sludge from STP's would be sent to the centralized processing facility viz. bio-gas generation plant / Organic waste converter system to be developed in within the project site. Further, the spent oil from the D.G. sets will be sold to C.P.C.B. approved recyclers.</p> <p>e-Waste :- Discarded computer parts, monitor, key boards etc. constitutes e-waste and this waste will be stored in an earmarked area. E-waste will be disposed as per e Waste (Management & Handling) Rules, 2012. The e-waste will be disposed through a KSPCB approved agency.</p> <p>Sewage:- The daily domestic sewage generation would be about 1,256 KL which will be treated at the proposed Sewage Treatment Plant within the project premises.</p> <p>Source :- <i>Manual on norms and standards for environment clearance of large</i></p> |
|--|------------|---|

| | | | |
|------|--|------------|--|
| | | | <i>construction projects issued by Ministry of Environment & Forests, Govt. of India.</i> |
| 1.16 | Facilities for long term housing of operational workers? | Yes | The proposed project is an Integrated I.T. township project with I.T. office buildings, Apartment buildings & Commercial Block and other utilities. Therefore no accommodation facility proposed within the site. For operational workers. |
| 1.17 | New road, rail or sea traffic during construction or operation? | Yes | Construction of integrated I.T. township project. Internal roads for movement inside the township will be constructed. |
| 1.18 | New road, rail, air, waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc? | Yes | Internal roads for movement inside the township will be constructed. It is proposed to construct an elevated arrangement for across the <i>drain</i> flowing within the site. |
| 1.19 | Closure or diversion of existing transport routes or infrastructure leading to changes in traffic movements? | No | Not applicable |
| 1.20 | New or diverted transmission lines or pipelines? | No | Not applicable |
| 1.21 | Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers? | Yes | There is a drain passing through the site which is flowing north to south side within the proposed site. It is proposed to construct an elevated arrangement for across the <i>drain</i> flowing within the site. |
| 1.22 | Stream crossings? | Yes | There is a drain passing through the site which is flowing north to south side within the proposed site. It is proposed to construct an elevated arrangement for across the <i>drain</i> flowing within the site. |
| 1.23 | Abstraction or transfers of water form ground or surface waters? | Yes | For the standby source of water from open wells within the project site. |
| 1.24 | Changes in water bodies or the land surface affecting drainage or run-off? | No | The project development does not envisage any change in the existing water body (within the project site & outside). As far as possible, the natural drainage or run-off would be maintained. |
| 1.25 | Transport of personnel or materials for construction, operation or decommissioning? | Yes | Transportation of personnel / material during the construction phase of the project development. During operation phase, the intermediate public transport system (IPT) would be developed for transport of personnel within the project site and outside. Also, it is proposed to have cycling tracks for commutation of people within |

| | | | |
|------|--|-------------|--|
| | | | the campus. |
| 1.26 | Long-term dismantling or decommissioning or restoration works? | No | There is no long term dismantling or decommissioning or restoration works. |
| 1.27 | Ongoing activity during decommissioning which could have an impact on the environment? | No | Not applicable |
| 1.28 | Influx of people to an area in either temporarily or permanently? | Yes | The proposed project is an integrated I.T. township project. The proposed project would provide job facilities for about 9,441 persons in operation phase & average 300 persons per day (skilled / unskilled) during construction phase. Further, on full occupancy of the project, the maximum population expected is 27,200 Persons (floating & fixed population) and hence there will be influx of large people to the area. |
| 1.29 | Introduction of alien species? | No | Not applicable |
| 1.30 | Loss of native species or genetic diversity? | Yes | There are different types of trees and different varieties of shrubs, herbs, grass & climbers existing at site. For the development of the proposed project, there will be clearance of some of the existing trees & different varieties of shrubs, herbs, grass, climbers. On completion of construction work, eco-restoration plan would be made. |
| 1.31 | Any other actions? | None | No |

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) | Yes | The total site area spread over an area of 8.17089 ha. which is undeveloped land covered with native species. The land for the proposed development is reserved for development of an integrated I.T. township project. |
| 2.2 | Water (expected source & competing users) unit: KLD | Yes | Construction phase :- The water consumption during construction phase is for meeting the domestic requirement (about 21 KLD) for the construction labourers. The water requirement for construction |

| | | | |
|-----|--|-----|--|
| | | | <p>purposes (45 KLD).</p> <p>The source of water will be from pond and Kerala Water Authority supply for meeting the non-flushing water requirement & treated water from sewage treatment plant for the flushing requirement.</p> <p>Operation phase :- The total daily domestic water consumption for the proposed project would be 1,570 KLD (which includes fresh water requirement of 889 KLD). The sources of water during operation phase for the proposed project are :-</p> <ol style="list-style-type: none"> 1. Stored Rain water in pond / tanks (Non-flushing req.) (Non-rainy days). 2. Kerala Water Authority supply / Open Wells (Non-flushing req.) (Non-rainy days) 3. Treated waste water from STP (Flushing Req.) (Entire year). <p>The details regarding the daily water consumption related items are provided at daily water balance chart and daily water consumption chart attached.</p> <p><i>Source :- Water consumption calculation based on Manual on norms and standards for environment clearance of large construction projects issued by Ministry of Environment & Forests, Govt. of India.</i></p> |
| 2.3 | Minerals (MT) | No | Not applicable |
| 2.4 | Construction material – stone, aggregates, sand / soil (expected source – MT) | Yes | <p>The expected construction material quantity is given below :-</p> <p>Steel : 2,00,000 MT</p> <p>Sand(manufactured): 60,00,000 cu.m.</p> <p>Cement Blocks : 1,10,00,000 cu.m.</p> <p>Cement : 10,00,000 Bags</p> <p>The construction materials would be brought from local suppliers available in the area.</p> |
| 2.5 | Forests and timber (source – MT) | Yes | Wood shall be used for frame of doors however recyclable wood shall be used for doors from local source. |
| 2.6 | Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW) | Yes | <p>Total Power Req. : 25 MVA</p> <p>Power Source : Kerala State Electricity Board (KSEB).</p> <p>Total capacity of D.G. Sets proposed (15 MVA) (Standby power back up</p> |

| | | | |
|-----|--|----|---|
| | | | arrangement for common area services) Fuel – Low Sulphur HSD |
| 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.

| Sr. 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) | No | This is an integrated I.T. township project and no storage of hazardous chemicals (as per MSIHC Rules) will be done, apart from diesel storage for D.G. Sets which will be operated only during emergency and suitable arrangement will be adopted for the same. It will be stored in HDPE drums and kept in covered rooms under lock and key. |
| 3.2 | Changes in occurrence of disease or affect disease vectors (e.g. insect or water borne diseases) | No | Appropriate mitigation / management measures will be adopted in both the construction and operation phase which will avoid stagnation or accumulation of water within the site & its surroundings. This will effectively restrict the reproduction and growth of disease vectors. Further, appropriate sanitation facility will be provided at site during construction phase & operation phase. Good house keeping and hygienic measures will be followed during construction and operation phase to avoid any cause which can lead to occurrence of disease. |
| 3.3 | Affect the welfare of people e.g. by changing living conditions? | Yes | The proposed project is an integrated I.T. township project and thereby the employment opportunities of qualified persons in the project vicinity will improve and this will improve the living & health index of the people around the project site. Also there will be various ancillary activities like hotels, retail shops, convention centre, multiplex, laundry, |

| | | | |
|-----|--|------|---|
| | | | education, restaurants, medical stores, transport facilities etc. attached to the project which will benefit the local people and change their living conditions. |
| 3.4 | Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc., | No | Not applicable. |
| 3.5 | Any other causes | None | 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 over burden or mine waste will be generated. The construction debris will be used for back filling purposes within the site. |
| 4.2 | Municipal waste (domestic and or commercial wastes) | Yes | There will be about 60 kg/day of municipal solid waste generated during construction phase. The total municipal solid waste to be generated from the proposed project would be about 5.295 Tons/day on full occupancy during the operation phase. This includes the packaging waste generated from the proposed township. |
| 4.3 | Hazardous wastes (as per Hazardous Waste Management Rules) | Yes | The oil used in the D.G. sets (as a standby source of power) after certain of hours of operation, needs to be changed. This used oil from the D.G. Sets will be sold to the CPCB approved recyclers. Also there will be discarded fuel filters & oil filters, discarded automobile & generator lead acid batteries and which will constitutes hazardous waste. The list of authorized recyclers for the processing of the above waste are M/s Perfect Alloys, Chengannur, M/s Peejay Enterprises, Thripunithura, M/s Excel Petrochemicals, Kochi. M/s Cee Jee Lubricants, Aluva. These companies are the approved recyclers for discarded batteries & used oil located in Kerala. |
| 4.4 | Other industrial process wastes | Yes | e-Waste :- Discarded computer parts, monitor, key boards etc. constitutes e-waste and this waste will be stored in an earmarked area. e-waste will be |

| | | | |
|------|---|-----|--|
| | | | disposed as per e Waste (Management & Handling) Rules, 2012. The e-waste will be disposed through a KSPCB approved agency. |
| 4.5 | Surplus product | No | Not applicable |
| 4.6 | Sewage sludge or other sludge from effluent treatment | Yes | The sludge from the Sewage Treatment Plants will be partially recycled for enhancing biological treatment and the excess sludge will be sent to the bio-gas generation facility and the bio-gas produced will be used within the campus and the manure produced will be used in green area during operation phase. |
| 4.7 | Construction or demolition wastes | Yes | Construction waste & demolition waste will be used for back filling purposes in the sites. |
| 4.8 | Redundant machinery or equipment | No | Not applicable |
| 4.9 | Contaminated soils or other materials | No | Not applicable |
| 4.10 | Agricultural wastes | Yes | Some agricultural waste & garden waste will be generated and which will be sent to the bio-gas generation plant. |
| 4.11 | Other solid wastes | No | Not applicable |

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 operation of the proposed project does not envisage any major air pollutant generating sources except D.G. Sets and from vehicular traffic, construction equipments during construction phase and operation phase. There will be D.G. sets for construction purposes in the construction site. During operation phase for power back up for proposed buildings, emergency services and for common area services, project proponent will provide D.G. sets. |
| 5.2 | Emissions from production processes | Yes | Only during construction phase, there will be a batching plant for the production of concrete mix. Not applicable during operation phase. |
| 5.3 | Emissions from materials handling including storage or transport | Yes | This will be restricted to the construction phase and within the project site only. |
| 5.4 | Emissions from construction activities including plant and equipment | Yes | Dust will be generated during unloading of construction materials, drilling and grinding operations etc. |

| | | | |
|-----|--|-----|--|
| | | | <p>This will be restricted to the construction phase and within the project site only.</p> <p>There will be batching plants for the production of concrete mix at construction site.</p> <p>The other source of emission is from D.G sets in the project site.</p> |
| 5.5 | Dust or odours from handling of materials including construction materials, sewage and waste | Yes | During construction phase, dust will be generated during the handling of construction materials. |
| 5.6 | Emissions from incineration of waste | No | Not applicable, no incinerator is proposed. |
| 5.7 | Emissions from burning of waste in open air (e.g. slash materials, construction debris) | No | Not applicable |
| 5.8 | Emissions from any other sources | No | Not applicable |

6.0 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 | <p>During construction, the machinery used for construction will be of highest standards and will be of reputed make and will adhere to international standards. These standards itself take care of noise generated from these machines. The construction involved is an integrated I.T. office buildings, apartment & other commercial buildings. There will be heavy construction machinery used for foundation works of different buildings & for other construction works.</p> <p>The source of vibration from the project is during construction of the building. Pile foundation excavation through rotary drilling is the source of vibration. The PPV levels from the rotary drilling for pile foundation would be maintained within 10 mm / sec. at 20 m. from the source. Therefore, there will not be any damage due to the vibration to be generated during foundation work to the nearby structures.</p> <p>Apart from this, the construction activity will be restricted to day time only.</p> <p>Noise will be created from operation of D.G. sets but all the D.G. sets shall be silent generators to restrict the noise</p> |

| | | | |
|-----|--|-----|--|
| | | | within the permissible limit. Noise barriers all along the project boundary during the construction phase will be installed. |
| 6.2 | From industrial or similar processes | No | Not applicable |
| 6.3 | From construction or demolition | Yes | Due to the various construction activities, there will be short term noise impacts in the immediate vicinity of the project site. The construction activity will include the following noise generation activities: Operation of D.G. Sets, batching plants and excavation works for foundation of structures. There will be noise generation during the demolition of old structures within the project site. There won't be any sound or vibration during piling as only Hydraulic Rigs are used. |
| 6.4 | From blasting or piling | No | No blasting / piling are adopted in the construction process. |
| 6.5 | From construction or operational traffic | Yes | Some amount of noise will be generated from vehicular movement in the construction and operation phase. There will be noise generation during cutting of marble & other stone materials. |
| 6.6 | From lighting or cooling systems | Yes | The lighting proposed within the project area during construction phase and operation phase will be limited to the permissible lux level. The I.T. buildings and other commercial buildings etc. will have centrally air conditioned cooling system and cooling towers will be installed in the buildings. Also noise will be generated from the cooling towers attached to HVAC system in the operation phase. |
| 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 | Used Oil from the D.G. Sets will be stored in HDPE drums and will be kept at a separate place and sold to CPCB approved recyclers. Therefore there is no risk of contamination due to used oil. The storage of used oil will be in such a way that no spillage of hazardous materials. |

| | | | |
|-----|---|----|--|
| | | | Hence there is no risk of any chemical from the site entering into the water body. |
| 7.2 | From discharge of sewage or other effluents to water or the land (expected mode and place of discharge) | No | The domestic sewage which will be generated during the construction phase & operation phase will be treated through proposed Sewage Treatment Plants to be developed within the premises. Hence there is no discharge of sewage and hence there is no discharge of any untreated sewage to the water body or to the land. All the sewage will be chanalized properly through closed pipes to the sewage treatment plants. The sewage after treatment will be utilized for flushing, horticulture & make-up water for cooling purposes. |
| 7.3 | By deposition of pollutants emitted to air into the land or into water | No | There is no emission except of D.G. set. By use of low sulphur diesel, the emission from the D.G. sets will be within the norms. |
| 7.4 | From any other sources | No | Not applicable |
| 7.5 | Is there a risk of long term build up 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 | The project is an integrated I.T. township project. The chances of explosions, spillages, fire are minimal. During construction all the labours will be provided with suitable personal protective equipment (PPE) as required under the health & safety norms. Training and awareness about the safety norms will be provided to all supervisors and labours involved in construction activity. An agreement will be signed with the contractor which will clearly deals with the safety aspects during construction. No major hazardous waste is being stored within the project site. No Industrial or process activity is involved in this project hence chances of chemical hazards and accidents are minimal. However, suitable fire fighting measures will be provided. |
| 8.2 | From any other causes | No | Not applicable |
| 8.3 | Could the project be affected by | No | As per seismic classification, the |

| | | | |
|--|--|--|---|
| | natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)? | | <p>project site falls in Zone-III. No reported cloudburst in the area. Also, as per the contour of the site, part of the land is having about 4 m. slopes within the site. As far as possible, these areas would be retained and the slope protection & relates measures will be incorporated while the preparation of the layout plan. Structural design aspects as per the seismic codes – IS 1893 (2002), IS 13920 (1993) and IS 456 (2000) as applicable would be incorporated in our project The project site is located close to a drain (passing through the site) and the building design will consider as per HFL of the drain.</p> <p><i>Source:- Seismic Zone Classification of India.</i></p> |
|--|--|--|---|

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 | <p>Lead to development of supporting utilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:</p> <ul style="list-style-type: none"> Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.) housing development extractive industries supply industries | <p>Yes</p> <p>Yes</p> <p>No</p> <p>Yes</p> | <p>Roads :- Appropriate infrastructure facilities supporting the proposed township like construction of new roads will be construct within the site. Water supply:- Water supply by Kerala Water Authority.</p> <p>The proposed project is integrated I.T. township which also consists of apartment buildings for the residents.</p> <p>The surrounding to the project site will have lot of residential developmental activities in order to cater the requirement of the proposed population within the integrated I.T. township.</p> <p>The proposed project will require large quantities of construction materials</p> |

| | | | |
|-----|---|-----|---|
| | <ul style="list-style-type: none"> other | Yes | <p>during its construction phase and thereby the supply industries or bulk suppliers of materials will be developed in the project vicinity.</p> <p>The project have multi activities like, offices, shopping malls, multiplex, restaurant, hotel, convention centre etc. and these developments will attract other ancillary activities like pathological laboratory, medical stores, essential services like milk supply & other items of human consumption and there will be bulk suppliers in the project vicinity.</p> |
| 9.2 | Lead to after-use of the site, which could have an impact on the environment | No | Not applicable |
| 9.3 | Set a precedent for later developments | Yes | Project proponent intends to develop an environmental friendly integrated I.T. township and to set a precedent for future development. |
| 9.4 | Have cumulative effects due to proximity to other existing or planned projects with similar effects | Yes | The project site is surrounded by National Highway, Individual houses, Roads, <i>Vacant land</i> , located within the immediate vicinity of the project site. Also there is a drain passing through the site which will be retained during construction & operation phase. |

(III) Environmental Sensitivity

| Sr. 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 | Yes | Vazhani WLS – about 12 km (E) |
| 2 | Areas which are important or sensitive for ecological reasons - Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests | Yes | Water bodies :- Manali River, 1 km (E) Amballur lake, 6.5 km (SE) Storm water drain within the site |
| 3 | Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration | Yes | Kalai forest, 9.50 km, SE |

| | | | |
|----|---|-----|--|
| 4 | Inland, coastal, marine or underground waters | Yes | Water bodies :- Manali River, 1 km (E) Amballur lake, 6.5 km (SE) Storm water drain within the site |
| 5 | State, National boundaries | No | None within the area |
| 6 | Routes or facilities used by the public for access to recreation or other tourist, pilgrim areas | No | Not applicable |
| 7 | Defense installations | Yes | BSF Centre – about 3.5 km. |
| 8 | Densely populated or built-up area | Yes | The project site is within Thrissur district and in densely populated area. |
| 9 | Areas occupied by sensitive man-made land uses (<i>hospitals, schools, places of worship, community facilities</i>) | Yes | Hospitals, schools, places of worship, community facilities Located within 15 km. around the site. |
| 10 | Areas containing important, high quality or scarce resources (<i>ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals</i>) | No | None within the study area |
| 11 | Areas already subjected to pollution or environmental damage. (<i>those where existing legal environmental standards are exceeded</i>) | No | None within the study area |
| 12 | Areas susceptible to natural hazard which could cause the project to present environmental problems (<i>earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions</i>) | No | The project area and its surroundings falls under Zone-III, according to the Indian Standards Seismic Zoning Map. No reported earth quake, subsidence, erosion, cloudburst in the area or in its surroundings. Also, there is no reported landslides in and around the project site. |

(IV). Proposed Terms of Reference for EIA studies

Ans. The project is having built-up area 6,72,526 sq. m. which is more than 3,00,000 sq.m. and as per MoEF&CC Notification vide No. S.O.3999 dt. 09/12/2016 the proposed activity falls in Category 'A' under 8 (b) of EIA Notification, 2006 and hence EIA Studies will require for this project. The Terms of Reference (ToR) for EIA Study is already submitted at SEIAA, Kerala on 16/03/2016 and the same has been approved by SEAC, Kerala in its 65th SEAC, Meeting held on 06/12/2016 and on the basis of approved ToR, the EIA Study at site was carried out and the EIA Report was submitted at MoEF&CC portal vide our letter dt. 21/03/2017.


"I hereby give an 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 revoked at our risk and cost.

Place: KOZHIKODE

M/s MALABAR DEVELOPERS Private Limited

Signature

NAME


Syed. R. A

APPENDIX II

(See paragraph 6)

FORM-1 A

(Only for construction projects listed under item 8 of the Schedule)

**Environment Clearance for Integrated I.T. Township project by
M/s Malabar Developers Pvt. Ltd.**

at

Survey Nos. 137/2, 137/1, 137/3, 135/1, 136/1, 133/1, 136, 136/1, 136/1, 136/1, 136/2, 134/2, 146, 147/2, 147/4, 147/3, 147/2, 146, 142/2, 141, 139/3, 139/1, 138/2, 138/1, 153/2, 152/4, 151/3, 150, 145, 144, 148, 152/2, 153/2, 148, 148, 148, 153/2, 152/2, 152/4, 148, 146/1, 149, 152/2, 146/1 (New Re-Survey Nos. 203/28, 203/30, 203/33, 203/34, 203/35, 203/36, 203/37, 203/38, 203/39, 203/40, 203/41, 203/42, 203/44, 204/1, 204/2, 204/4, 204/5, 204/ 8), Ollur Village, Thrissur Corporation, and

Survey Nos. 344, 344, 345/3, 334/1, 334/1, 344, 340/3, 340/3, 334/1, 339/1, 340/3, 340/3, 337, 340/3, 343/2, 342/1 (New Re-Survey Nos. 87/1, 87/2, 87/5, 89/11, 89/15, 90/44, 90/45, 90/47, 90/79), Marthakara Village, Puthur Panchayath Thrissur Taluk & District, Kerala

CHECK LIST OF ENVIRONMENTAL IMPACTS

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

1.0 LAND ENVIRONMENT

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

- 1.1. Will the existing land use get significantly altered from the project that is not 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 be submitted). Attach Maps of (i) site location, (ii) surrounding features of the proposed site (within 500 meters) and (iii) the site (indicating levels & contours) to appropriate scales. If not available attach only conceptual plans.

Ans. The land for the proposed development is in Marthakkara Village, Puthur Panchayat and in Ollur Village, Thrissur Corporation, Thrissur Taluk & District, Kerala.

The Conceptual plan showing the building blocks of I.T. offices & commercial buildings, apartment blocks, entries & exits to the site along with supporting infrastructure facilities is attached.

The facilities proposed are :-

Residential Building, I.T. Office Building, Shopping Mall, Hotel, Convention Centre, Restaurant / food court, Multiplex, Electrical Substation, Rain water collection pond, & other services & related facilities.

- 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.

Ans. The major project requirements for this project are mentioned below:-

Total cost of project = About Rs 2,000 crores

| | | |
|----------------------------|----------|---|
| Total Plot Area | = | 8.17089 ha. (20.19 Acres) |
| Total Built-up Area | = | 6,72,526 sq.m. (Processing built-up area = 1,95,007 sq.m.) + (Non-processing built-up area = 4,77,519 sq.m.) |

The expected water Requirement during construction phase is given below :-

| | | |
|--------------------------------------|----------|----------------|
| Total domestic water req. | = | 21 KLD |
| Total construction water req. | = | 45 KLD |
| Total water requirement | = | 66 KLD |
| Total power requirement | = | 0.5 MVA |

The expected water Requirement during operation phase is given below :-

| | | |
|--|----------|------------------|
| Total domestic Water Req. | = | 1,570 KLD |
| Fresh water Req. | = | 889 KLD |
| Total domestic fresh water (non-flushing) requirement | = | 863 KLD |
| Total flushing water requirement | = | 707 KLD |
| HVAC cooling tower make-up water requirement | = | 450 KLD |
| Horticulture water Requirement | = | 50 KLD |
| Total Power Requirement | = | 25 MVA |

Connectivity :-

There is three separate entry exit to the project and the access to the project site is from *N.H. 47 (Salem – Kochi – Kanyakumari Highway)* which is well connect to entire district.

The nearest railway stations (Ollur Railway Station) which is located at about 3.5 km. and Cochin International Airport, Nedumbassery is at about 50 km. away from the project site.

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, disturbance to the local ecology).

Ans. The proposed project is located partially in Puthur Grama Panchayath and partially in Thrissur Municipal Corporation limits. The likely impacts of the proposed activity on the existing facilities adjacent to the project site w.r.t. open space, community facility, existing land use & local ecology are given below :-

| Sr. No. | ENVIRONMENTAL ASPECTS | ANTICIPATED IMPACTS |
|---------|-----------------------|---|
| 1. | Open space | Encroachment of open space for storage of construction materials and for setting up of labour colony. |
| 2. | Community facilities | The community facilities available adjacent to the project site like water supply & electric supply will have no impact The community facilities available adjacent to the project site like access roads & the public transport will have impact. |
| 3. | Existing land use | The proposed project is an integrated I.T. township project. The proposed project development will attract development of residential / commercial / institutional buildings around the project site and therefore the proposed land use is in conformity with the land use and therefore have no adverse impact. |
| 4. | Ecological Resources | The ecological assessment on the faunal & floral aspects of the project site and the buffer zone will be carried out. The study includes the ecological assessment of the drain passing through the project site. The proposed project will need to incorporate measures to mitigate, these impacts. |

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).

Ans. The details are given below :-

| Sr. No. | ASPECTS | DETAILS |
|---------|----------------|--|
| 1. | Soil type | Bore hole investigation carried out. It is observed that the water table is higher level. Also the soil analysis for the required parameters as per MoEF guidelines will be carried out for the project site. |
| 2. | Slope analysis | As per the contour of the project site, there is level difference towards north east to south west side about 4 m. within the site. The proposed development tries to retain the existing topography. |
| 3. | Seismicity | As per Seismic zone classification of India the project site is falls under Seismic Zone-III. |

| Sr. No. | ASPECTS | ANTICIPATED IMPACTS |
|---------|--------------|---|
| 1. | Soil erosion | There is water bodies abutting the project site also the average annual rainfall of the region is varied between about 2180.0 and 3484.0 mm. The land portion with clayey soil will have marginal erosion during heavy rain and hence some impact. It is proposed to construct an elevated arrangement for across the drain flowing within the site. |

| Sr. No. | ASPECTS | ANTICIPATED IMPACTS |
|---------|-------------------------------------|---|
| 2. | Subsidence & instability | The sandy clay soil do not have good soil bearing capacity and there are chances of subsidence and will have impact. The sand has good soil bearing capacity and will have minimal impact. As per the Seismic Zoning Classification classifying the project site in Zone-III. The stability of the structures will have moderate impact. |

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)

Ans. The land for the proposed development is passing through a drain. It is proposed to construct an elevated arrangement for across the drain flowing within the site. The contour survey of the site for determining the drainage pattern of the site was carried out. The proposed development does not disturbed natural drainage system.

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.)

Ans. Excavation of earthwork for foundation of structures work will be carried out. The top soil which is fertile will be kept at site for landscaping work. The excavated soil will be used for back filling work and for internal road construction purposes.

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

Ans. Construction phase – It is expected to have about 300 workers (average) involved during construction phase. The water requirement during construction period is from the stored rain water / KWA supply / wells. The major part of the construction water requirement will be fully consumed for construction activities.

The sewage generation from labourers during construction period would be about 17 KLD and this quantity of domestic waste would be disposed through a sewage treatment plant. The treated sewage will be used for meeting the landscape & sprinkling, dust suppression purposes. The non bio-degradable waste, the empty cement bags, other packaging materials etc. would be disposed to the vendors. The bio-degradable solid waste from the labour colony will be disposed in a bio-bin system facility from the labour colony.

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)

Ans. Not applicable.

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

Ans. The construction waste mainly consists of earth, debris concrete, lumber, masonry and cardboards which are about 35%, 15%, 12% and 10% respectively. The recyclable non-biodegradable waste like cement blocks, wood, iron bars, aluminium sections etc. will be salvaged from the debris would be re-used or sold to the vendors. The inert construction debris will be disposed for land filling or back filling.

The total municipal solid waste expected from the project site including the labour colony is expected to be 60 kg/day. The bio-degradable food waste

from the labour colony will be disposed through bio-bin system. The non-biodegradable waste will be stored and sold to the vendors. The packaging material like cement bags etc. would also be sold to the vendors.

2.0 WATER ENVIRONMENT

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

Ans. The details are provided below :-

The water requirement during construction phase are for construction purposes and for the domestic water requirements of the construction workers.

WATER REQUIREMENT WITH BREAK UP

The expected water requirement during construction phase is given below :-

| | | |
|-------------------------------|---|---------|
| Total domestic water req. | = | 21 KLD |
| Total construction water req. | = | 45 KLD |
| Total water requirement | = | 66 KLD |
| Total power requirement | = | 0.5 MVA |

The expected water requirement during operation phase is given below :-

| | | |
|---|---|-----------|
| Total domestic Water Req. | = | 1,570 KLD |
| Fresh water Req. | = | 889 KLD |
| Total domestic fresh water (non-flushing) requirement | = | 863 KLD |
| Total flushing water requirement | = | 707 KLD |
| HVAC cooling tower make-up water requirement | = | 450 KLD |
| Horticulture water Requirement | = | 50 KLD |

SOURCE OF WATER

Construction phase

The water requirement during the construction phase will be mainly from the Stored rain water / Kerala Water Authority supply / wells (for emergency purposes) for meeting the non-flushing water requirement and treated water from sewage treatment plant for the flushing requirement.

Operation phase

The total daily domestic water consumption for the proposed project would be 1,570 KLD (which includes fresh water requirement of 889 KLD). The sources of water during operation phase for the proposed project are :-

- 1. Rain water collection tanks / pond (Non-flushing req.) (rainy days).**
- 2. Well water (Non-flushing req.) (Non-rainy days).**
- 3. Kerala Water Authority supply (Non-flushing req.) (Non-rainy days)**

4. Treated waste water from STP (Flushing Req.) (Entire year).

WATER BALANCE

The details regarding the daily water consumption statement is provided.

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

Ans. The capacity of the proposed source of water during construction phase & operation phase is provided below :-

Construction phase

The source is from the stored rain water / Kerala Water Authority / well water and also from the treated water from sewage treatment plant, the water requirement during construction phase is dependable.

Operation phase

Rainy days :-

The source of water for the proposed project during operation phase will be from the proposed Rain water collection pond (concurrent use) to be construct within the site. Also there will be rain water collection tanks which will ensure the non-flushing water requirement during rainy days. Also there will be treated water from sewage treatment plant to meet the flushing water requirement and as make up water to the cooling towers attached to HVAC system requirement.

Non-rainy days :-

During non-rainy days, the source of water for the proposed project (operation phase) will be from the proposed Rain water collection tanks / pond. Also there will be rain water collection tanks which will ensure the non-flushing water requirement during non-rainy days. Also there will be treated water from sewage treatment plant to meet the flushing water requirement and as make up water to the cooling towers attached to HVAC system requirement.

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)

Ans. The source of water for the proposed project will be from stored rain water during rainy days & non-rainy days for non-flushing purposes & treated water from sewage treatment plant to meet the flushing requirement.

The quality of water required for non-flushing requirement should be as per IS : 10500.

The qualitative analysis of water from the site will be carried out through a NABL accredited laboratory.

The qualitative analysis of water (ground & surface) through a NABL accredited laboratory will be carried out.

The water requirement for the flushing purposes is met from treated water from sewage treatment plant and the quality of the treated water after tertiary treatment meet the flushing, horticulture & make-up water for cooling purposes.

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

Ans. The proposed project has provision for treatment of sewage from the project premises. The quantity of treated water from STP which is fit for recycling to meet the flushing requirement, horticulture requirement and to partially meet the make-up water for cooling towers attached to HVAC system requirement. The details of recycling and it's usage are provided in water balance chart.

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)

Ans. The water supply will not involve and diversion of water from other existing users, as the public supply has provide the water supply lines for the project.

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)

Ans. There would be no incremental pollution load from wastewater generated from the proposed activity because the whole waste water (domestic) of this project would be treated through sewage treatment plant and the treated water from S.T.P will be fully re-used for flushing, horticulture, & as make-up water to cooling towers attached with HVAC system.

The quantity of treated water from STPs which is fit for recycling to meet the flushing requirement, horticulture requirement and to partially meet the make-up water for cooling towers attached to HVAC system requirement. The details of recycling and it's usage are provided in water balance chart. As per the water balance chart, there will not be any discharge of waste water outside the project site.

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

Ans. The sources of water during operation phase for the proposed project during rainy days are :-

- **Rain water collection tanks (Non-flushing req.) (concurrent use).**
- **Stored Rain water in pond / tanks (Non-flushing req.) (Rainy days & Non-rainy days).**

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

Ans. The proposed project is an integrated I.T. township project. Therefore the proposed land use is in conformity with the land use and therefore have no adverse impact..

Measures to mitigate the anticipated impacts due to the runoff from the site:-

- **There is a drain passing through the site which will be retained and it is proposed to construct an elevated arrangement for across the *drain* flowing within the site.**
- **The run-off from the site enters the drain available along the approach road only through designated points.**
- **The storm water channels based on the contour of the land will be constructed for channelizing the runoff from the site and from the upstream side outside the project site.**
- **The storm water channels before disposal from the site will be passed through de-siltation traps attached with oil separator.**

These measures will ensure that the run-off from the site after development (qualitatively and quantitatively) will not have any negative impact or chances of flooding or water logging in the site.

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)

Ans. There is abstraction of ground water (only for emergency purposes) involved in the project and hence there will not be any negative impacts of the project on the ground water.

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

Ans. The run-off during construction phase will be partially channelized to the rain water storage tanks / pond. The excess runoff will be channelised to the drain after de-silting and oil removal and therefore, the run-off during construction phase will not contaminate the land or the aquifer.

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)

Ans. The storm water from the site will be appropriately channelised to the storm water collection tanks and pond to be constructed within the site and the excess will be connected to drain after the de-siltating trap and oil removal unit. The natural drainage pattern based on the current contour of the site is maintained as far as possible in the channelization of storm water. Storm water tanks / storm water collection pond will be constructed to minimize the runoff from the site. The storm water collected will be a source of water during rainy days and post rainy days.

Other measures for avoiding the negative impacts due to the runoff from the site:-

- **The run-off from the site enters the water body only through designated discharge points.**
- **The storm water channels based on the contour of the land will be constructed for channelizing the runoff from the site.**
- **The storm water channels before exiting the site will be passing through de-silting traps attached with oil separator.**

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

Ans. The average labour population will be of about 300 persons in the construction phase. The proposed project has provision of labor colony and the domestic sewage will be directed to the sewage treatment plant for treatment of sewage during the construction period. Also, it is proposed to direct bio-degradable waste (food waste disposal) from labor colony to the bio-bin system. Also, it is proposed to employ dedicated staff for good house keeping of the construction site premises and the labor colony premises. These measures will ensure good hygienic conditions around the labor colony.

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)

Ans. The project has provision of sewage treatment plant for the treatment of sewage during operation phase. Tertiary treatment would be use for sewage treatment plant for the treatment of sewage. For recycling of treated water, dual plumbing techniques would be adopted. The treated water will be fully recycled for

meeting the flushing, horticulture and excess to meet the cooling water requirement. There will be no sewage discharge from the proposed project premises after development of the proposed project.

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

Ans. The treated waste water from the Sewage Treatment Plant during the operation phase of the project will be used for flushing, horticulture and cooling purposes and for which dual plumbing system is proposed.

3.0 VEGETATION

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

Ans. Qualitative & Quantitative ecological assessment of the complete project site would be carried out. There are different types of trees and different varieties of shrubs, herbs, grass, climbers & old sheds/structures existing at site. For the development of the proposed project, there will be clearance of existing trees & different varieties of shrubs, herbs, grass, climbers.

A complete ecological assessment study report of the project site will be carried out.

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

Ans. Qualitative & Quantitative ecological assessment of the complete project site would be carried out. There are different types of trees and different varieties of shrubs, herbs, grass, climbers & old sheds/structures existing at site. For the development of the proposed project, there will be clearance of existing trees & different varieties of shrubs, herbs, grass, climbers.

A complete ecological assessment study report of the project site will be carried out.

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)

Ans. As part of the landscape development for the proposed project, the appropriate measures proposed to minimize the impacts. Plantation of rows of broad leafs trees of native species and to create Environmental Barrier.

4.0 FAUNA

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

Ans. There will be no displacement of fauna due to the construction of the proposed project.

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

Ans. There is no direct or indirect impact on the avifauna of the area due to this project. The proposed project after the proposed eco restoration with lot of flowering trees and fruit bearing trees will enhance the presence of avifauna.

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

Ans. Not applicable

5.0 AIR ENVIRONMENT

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

Ans. The proposed project is an integrated I.T. township project and the only source of emission is from D.G. sets which will be operated during power break down. Therefore, the operation of the D.G. sets will not increase atmospheric concentration of gases. The stack attached to the proposed D.G. Sets will follow all the rules and regulations of State Pollution Control Board and Central Pollution Control Board.

The ambient air quality of the project site and its surroundings will be carried out through a NABL accredited laboratory.

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.

Ans. During construction phase, there will be generation of dust & smoke due to this project.

| ENVIRONMENTAL ASPECTS | ANTICIPATED IMPACTS |
|------------------------------|--|
| CONSTRUCTION PHASE | |
| Air Quality | <ul style="list-style-type: none">➤ Emission of fugitive dust due to excavation, material handling, marble & other stone cutting.➤ Flue gas emissions from D.G. sets used during construction➤ Emissions from construction equipments & other vehicles |
| OPERATION PHASE | |
| Air Quality | <ul style="list-style-type: none">➤ Flue gas emissions from D.G. sets used during emergency➤ Emissions from vehicles |

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.

Ans. The proposed project would provide vehicle parking facilities within the campus at basement floor levels.

The conceptual plan clearly shows the internal traffic management with entry and exit to the proposed project site.

There is three separate entry exit to the project and the access to the project site is from N.H. 47 (Salem – Kochi – Kanyakumari Highway) which is well connect to entire district.

The nearest railway stations (Ullur Railway Station) which is located at about 3.5 km. and Cochin International Airport, Nedumbassery is at about 50 km. away from 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.

Ans. The conceptual plan clearly shows the internal traffic management with entry and exit to the proposed project site, all internal roads with width, pedestrian path ways and footpath, bicycle tracks etc. The total area earmarked for internal roads & pavement areas.

Further provision of ramps are proposed for the easy access to the buildings for physically challenged persons.

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.

Ans. The proposed project is an integrated I.T. township project and there would be some increase in noise and vibration due to the vehicular movement within the project site. The project has provision of large area for the parking for the vehicles. It is also proposed to construct basement floor level car parking area that there would be easy movement of vehicles within the project area and smooth movement is provided for the vehicles to reduce the traffic congestion. These measures will reduce traffic noise & vibrations.

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.

Ans. There will not be any adverse impacts as the D.G. sets which would be used for the project will be provided with sound proof acoustic enclosures and hence there will be no impact to the surroundings. The D.G. sets would be attached with proper anti vibration pads to reduce any vibration impact to the site surrounding.

The flue gases from the D.G. sets 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.

The ambient noise level of the site will be carried out through a NABL accredited laboratory.

6.0 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?

Ans. There is no scenic amenity or landscapes around the proposed site.

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

Ans. There is a drain existing which is passing through the site. For the development of the proposed site, this drain will be retained and maintained. There are existing old single storey (4 nos.) houses / structures in the project site which will be cleared from the site during construction phase. and hence there is no other adverse impacts from new construction.

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

Ans. The proposed project would be constructed in conformity with the Kerala Panchayat / Municipal Building Rules (KPBR / KMBR). The project is partially falling in Panchayat and partially in Municipal limits which covers the anticipated external infrastructures facilities to the proposed project. The project site is dividing with a drain and the building design will consider HFL of the drain.

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.

Ans. There is no report of existence of any anthropological or archaeological site nearby the project area. The proposed project is located partially in

Puthur Grama Panchayath and partially in Thrissur Municipal Corporation limits. The vicinity map showing the site & surrounding area is provided.

7.0 SOCIO-ECONOMIC ASPECTS

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

Ans. The proposed project is an integrated I.T. township project. During construction phase, about 300 workers (average) will be at site.

During operation phase, on full occupancy of the project, the maximum population expected is about 27,200 persons (fixed & floating) and hence there will be influx of people (floating and fixed) to the project area and surrounding and this will definitely change the demographic structure of the local population. The existing demographic structures of the area will provide in the socio economic aspect study which will be carried out by the functional area experts.

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

Ans. There are several schools, colleges, religious places commercial and residential buildings, Govt. and private offices, hospitals are located around the proposed project. The vicinity map showing the surrounding details of the proposed project is provided. The details regarding the social infrastructure assessment study around the project site will be carried out.

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

Ans. The project would not cause any adverse effects on local communities, disturbance to sacred sites or other cultural values. The proposed project is an integrated I.T. township project and thereby the employment opportunity, living & health index of the people around the project site will definitely improve. Also there will be various ancillary activities like hotels, restaurants, medical stores, transport facilities etc. attached to the project which will benefit the local people and change their living condition. The corporate social responsibility activities proposed in compliance to “*The Company’s Act, 2013*” will be followed as applicable.

8.0 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)

Ans. The proposed project is an integrated I.T. township project which consist of office buildings, shopping mall, hotel, convention centre buildings will have centrally air conditioning. The selection of building materials plays a major role in the energy consumption. The proposed project will make all attempts to use to avoid building materials with high embodied energy. Further, the river sand will be replaced by manufactured sand from stone crushers. The glass used will be low emissivity and having U value as per ECBC norms.

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

Ans. All vehicles which bring construction material to the site would possess Pollution Under Control Certificates (PUC). All vehicles would be of close body to avoid spread of dust from the loose materials, and vehicles which

bring sand, stone dust, etc. would ensure that the above mentioned material are properly wetted during transportation to avoid dust generation. Pucca Road to be made in the construction site for the vehicle movement so that the dust generation due to the vehicular movement within the project site can be minimized. Stacking of construction material shall be confined to the project site only. All the D.G. Sets would have attached with Acoustic Enclosure for the sound pollution control and all sound generating construction activity to be minimized. Further barricading of the site with GI sheets of 20 ft height in the side abutting the public road & drain (which is passing through the site) during construction phase.

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

Ans. The plastic (non-biodegradable solid waste) will be used along with coal tar during the construction of internal roads. This will increase the life of roads.

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

Ans. The details are given below :-

Solid Waste

- ✓ The proposed project will generate about 5.30 Tons/day during operation phase.
- ✓ The solid waste from the proposed project will be segregated into two categories at source itself as per Municipal Solid Waste Rules, 2000 by providing appropriate colored bins i.e., Bio-degradable (green bins) & non-biodegradable (blue bins).
- ✓ Bio-gas generation plant / OWC would be installed for disposal of bio-degradable waste & sludge from STP.
- ✓ The bio-gas generated from the bio-gas plant would be consumed within the site.
- ✓ The manure produced would be used for green area development within the premises.

Hazardous Waste

- ✓ As per Hazardous Waste (Management & Handling Rules), 2003, the hazardous waste i.e., the used oil from D.G. sets, discarded oil filters and discarded batteries and stored separately and will be disposed to CPCB / SPCB authorized vendors only.

E-waste

- ✓ Discarded computer parts, monitor, key boards etc. constitutes e-waste and this waste will be stored in an earmarked area. e-waste will be disposed as per e Waste (Management & Handling) Rules, 2012.
- ✓ The e-waste will be disposed through a KSPCB approved agency.

9.0 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?

Ans. The total power requirement is estimated to be about 25 MVA and will be from by Kerala State Electricity Board. The project will make provision of D.G. Sets (total capacity of about 15 MVA) as standby power back up arrangement for I.T. buildings, shopping mall, hotel, convention centre & common area services of electricity during operation phase. The proposed

project will have provision of power saving and maximum natural light will be provided to minimize energy consumption. Other measures are:

- Solar power plant for each building for lighting of common areas.
- Water cooled chillers in place of air cooled chillers which are energy intensive & the treated water available from STP would be used as make-up water attached to the water cooled chillers.
- Solar Energy operated Photovoltaic lighting for partial external areas lighting.
- Savings in energy by the use of LED lamps.
- Building Management System (BMS) through sensors for maximizing the energy conservation.
- Solar water heating system for the hot water requirement.
- Electrical fixtures & HVAC unit would be of 5 star series as per Bureau of Energy Efficiency (BEE) to achieve reduction in energy consumption.
- Building materials selection would be in compliance to Energy Conservation Building Code (ECBC) as per climate zone since the building proposed is a centrally air conditioned building.
- Courtyards open to sky are proposed in the buildings (non-air conditioned buildings) for getting natural lighting to the interior areas of the building.
- Total energy saving is expected to be of about 22%.

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

Ans. The project proponent has made provision of D.G. Sets (total capacity of about 15 MVA) as standby power back up arrangement for common area services.

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?

Ans. The glass used will be double glass and with low emissivity and the other specifications of the glass will comply with the norms as per ECBC (for air conditioned buildings & non-air conditioned buildings).

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

Ans. All the relevant features are incorporated like the orientation of the building, shading effect etc.

9.5. Does the layout of streets & buildings maximise 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.

Ans. Due consideration has been taken for maximum use of the solar energy while preparation of layout plan. The project proponent shall made provision for solar panel system (hot water purpose) and solar energy devices will be used for street lighting, emergency lighting in the proposed project.

Further, provision would be made to set-up a Solar Power Plant based on Photo-Voltaic (PV) technology, on the roof top of the building. The size of the proposed solar power plant for the buildings was calculated to be 20 kWp. The solar power plant is proposed to be connected at LT level (0.433 kV) in parallel with the electrical grid of the institute. The solar power plant would be able to generate more than 30,000 units annually and cater to partial electrical requirement of the building. The entire generation from the solar power plant would be self-consumed by the residential, hotel, convention, shopping mall buildings. Additional requirement of power during the day would be met by the supply from electrical grid or D.G. sets. It is envisaged that the proposed solar power plant would result in

substantial saving of electricity from the grid or diesel consumption in D.G. sets. Also, it is proposed to have solar power operated street lights, solar water heating system etc for energy conservation.

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?

Ans. All the relevant features are incorporated like the orientation of the building, shading effect etc. (for air conditioned buildings & non-air conditioned buildings).

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.

Ans. Suitable energy optimization will be adopted during the calculation of energy load of the proposed project. The space heating load will be minimized using passive solar structure and suitable buildings envelop material. Uses of incandescent lamp and halogen lamps have been avoided and energy efficient LED lamps will be used for all common area. The diesel generator sets shall be automatically controlled to optimize their usage based on the actual load requirements at any time. Variable frequency drive systems would be adopted for the lifts, air conditioning system etc to maximize the energy saving.

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

Ans. More open spaces are proposed within the site to avoid creation of any heat islands. The roads and parking spaces would be with concrete slabs intermittent with grass on surrounding.

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

Ans. The building construction material namely bricks, concrete and steel are being used in the construction. U-factor, also known as Thermal Transmittance, is heat transmission in unit time through unit area of a material or construction and the boundary air films, induced by unit temperature difference between the environments on each side. The glass used will be low with low emissivity and the other specifications of the glass will comply with the norms as per ECBC. The further details are:-

| Sr. No. | Description of Material with Specification for Non-air conditional building | U-Value Achieved (W / m ² K) | Type & Manufacturer |
|---------|--|---|---|
| 1. | WALLS (Cement plaster + Insulative internal plaster + 200 mm thick Cement Blocks, External enamel coating) with wall insulation | < 1.25 | Wall insulation Gyproc gypsum plaster – 15 mm on interior surface, Make : Saint. Gobtain – Gyproc |
| 2. | ROOF (115 mm RCC + 65 mm Vermiculite + 100 mm brick coba + 25 mm Roof Tiles finish) with Roof insulation | < 0.5 | Elastopor PUR Board 50 mm + HDPE 500 micron + Geotextiles Make : BASF |
| 3. | GLASS (Single Clear 4 mm Glass) | 4.20 | Neutral Colour, Clear (non reflective) Make : M/s Asahi India (AIS) |

| Sr. No. | Description of Material with Specification for Air-conditional building | U-Value of the overall assembly |
|---------|--|---------------------------------|
| 1. | EXTERNAL WALL External finish + 200 mm thick Cement Blocks + Thermal insulation + Stone cladding wall plastered on both side with 5 mm thick aluminium composite panel | 0.39 W / m ² K) |
| 2. | ROOF 150 mm thick expanded polystyrene insulation + Water Proofing Compound + 40 mm thick Roof Tiles Grouted with 1:4 Cement Mortar | 0.367 W / m ² K) |
| 3. | GLASS Glazing shall be of double glass with air gap (6 mm + 12 mm air gap + 6 mm) | 3.30 W / m ² K) |

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

Ans. List of equipments proposed for Fire Fighting Measures:-

- A. The major equipments proposed for Fire Fighting Measures are Main Hydrant Pump, Sprinkler Pump, Diesel Engine Pump, Jockey Pump.**
- B. Capacity of Fire Water Storage Tanks & Number: -**
It is proposed to have Fire Water Storage Tank appropriate capacity of overhead tank for fire fighting provided at the tower.
- C. Fire Detecting Equipments: -**
The Fire Detecting Equipments would be as per BIS and NBC norms.
- D. Other Fire Fighting Measures: -**
The other Fire Fighting Measures proposed includes, an Emergency Control Room, Separate Fire exit during emergency, all rooms with Fire Detector / 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.
The nearest fire station is at Veliyannur Fire Station, Thrissur which is about 8 km. away from the project site.

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

Ans. 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.

The glass used will be low with low emissivity and the other specifications of the glass will comply with the norms as per ECBC.

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

Ans. 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 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 utilised in the overall energy consumption? Provide details of the renewable energy technologies used.

Ans. The use of non-conventional source of energy in the proposed construction project are as follows: -

a. Solar Water Heater: -

The proposed project would install solar panels for hot water requirements and hence the dependency on electricity for hot water generation can be minimized. This would conserve lot of coal which produces the electricity through public supply and also load on D.G. sets also would be reduced and there by conserve diesel.

b. Solar Street Light: -

It is also suggested to use solar cell powered street lights within the proposed project site for conservation of electricity.

c. Use of LED Lamps: -

The project proponent would use LED Lamp which conserve less electricity.

d. 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.

Solar power back is proposed for each main building in the township.

10.0 Environment Management Plan

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

Environmental Management Plan

| Sr. No. | Potential Impacts | Action | Parameters for Monitoring |
|------------------------------|-------------------|--|---|
| I. Construction Phase | | | |
| 1. | Air Emissions | All equipments are operated within specified design parameters | Random checks of equipment logs/manuals |
| | | Vehicle trips to be minimized to the extent possible | Vehicle logs |
| | | Any dry, dusty materials stored in sealed containers or prevented from blowing. | Absence of stockpiles or open containers of dusty materials. |
| | | Compaction of soil during various construction activities | Construction logs |
| | | Ambient air quality within the premises of the proposed unit to be monitored. | The ambient air quality will conform to the standards for PM ₁₀ & PM _{2.5} , SO ₂ and NO _x , CO |
| 2. | Noise | List of all noise generating machinery onsite along with age to be prepared. Equipment to be maintained in good working order. | Equipment logs, noise reading |
| | | Night working is to be minimized. | Working hour records |
| | | Generation of vehicular noise | Maintenance records of vehicles |
| | | Implement good working practices (equipment selection and siting) to minimize noise and also reduce its impacts on human health (ear muffs, safe distances, and enclosures). | |

| | | | |
|----|---|--|--|
| | | No machinery running when not required. | Site working practices records, noise reading |
| | | Acoustic mufflers / enclosures to be provided in large engines | Mufflers / enclosures in place |
| | | Noise to be monitored in ambient air within the plant premises. | Noise reading |
| | | The noise level will not exceed the permissible limit both during day and night times. | |
| | | All equipments operated within specified design parameters. | Random checks of equipment logs / manuals |
| | | Vehicle trips to be minimized to the extent possible | Vehicle logs |
| 3. | Waste water Discharge | No treated or untreated discharge to be made to surface water, ground water or soil | No discharge hoses in vicinity of watercourses |
| 4. | Soil Erosion | Minimize area extent of site clearance, by staying within the defined boundaries and to avoid steep slopes | Site boundaries not extended / breached as per plan document |
| | | Protect topsoil stockpile where possible at edge of site | Effective cover in place |
| 5. | Drainage and effluent Management | Ensure drainage system and specific design measures are working effectively. The design to incorporate existing drainage pattern and avoid disturbing the same | Visual inspection of drainage and records thereof |
| 6. | Waste Management | Implement waste management plan that identifies and characterizes every waste arising associating with proposed activities and which identifies the procedures for collection handling & disposal of each waste arising. | Comprehensive waste management plan in place and available for inspection on site. Compliance with MSW Rules, 1998 and Hazardous Waste (Management and Handling Rules), 2003 |
| 7. | Non-routine events and cool dental releases | Plan to be drawn up Considering likely emergencies and steps required to prevent / limit consequences | Mock drills and records of the same |
| 8. | Environment Management Cell/Unit | The Environmental Management Cell / Unit is to be set up to ensure implementation and monitoring of environmental safeguards. | Formation of Environment Management Cell by the project proponent |

II. Operational Phase

| Sr. No. | Potential Impacts | Action | Parameters for Monitoring |
|---------|-------------------|---|---|
| 1. | Air Emissions | Stack emissions from DG set to be optimized and monitored | The ambient air quality will conform to the standard for PM ₁₀ & PM _{2.5} SO ₂ , and NOx, CO |
| | | Ambient air quality within the premises of the proposed unit to be monitored. | The ambient air quality will conform to the standards for PM ₁₀ & |

| | | | |
|----|--|---|--|
| | | Exhaust from vehicles to be minimized by use of fuel efficient vehicles and well maintained vehicles having PUC certificate. | PM _{2.5} as given by PCC Vehicles logs to be maintained |
| | | Promotion of cycle tracks | Providing efficient cycles by project proponent |
| | | Promotion of water transport | Solar powered boats |
| | | Promotion of pedestrian walkways & pathways | Proper maintenance of pedestrian walkways & pathways |
| | | Promotion of Inter mediate public transport (IPT) within the campus | Efficient IPT with comfortable buses |
| | | Vehicle trips to be minimized to the extent possible | Vehicle logs |
| 2. | Noise | Noise generated from operation of DG set to be optimized and monitored DG sets to generate less than 75 dB(A) Leg at 1.0 m from the source DG sets are to be provided at service building with a acoustic enclosures with height of chimney above roof level or as specified by SPCB | Maintain records of vehicles |
| | | Generation of vehicular noise | Maintain records of vehicles |
| 3. | Wastewater Discharge | No untreated discharge to be made to surface water, groundwater or soil | No discharge hoses in vicinity of watercourses |
| 4. | Storm water Drainage Management | Ensure storm water drainage system and specific design measures are working effectively. Design to incorporate existing natural drainage pattern and avoid disturbing the same. | Visual inspection of drainage and records thereof |
| 5. | Indoor air contamination | Contaminants such as CO, CO ₂ and VOCs to be reduced by providing adequate ventilation. | Monitoring of indoor air contaminants such as CO, CO ₂ and VOCs |
| 6. | Energy Usage | Energy usage for air-conditioning and other activities to be minimized Conduct annual energy audit for the buildings | Findings of energy audit report |
| 7. | Emergency preparedness , such as fire fighting | Fire protection and safety measures to take care to fire and explosion hazards to be assessed and steps taken for their prevention. | Mock drill records, on site emergency plan, evacuation plan |
| 8. | Environment Management Cell/Unit | The Environment Management Cell/Unit to be set up to ensure implementation and monitoring of Environmental safeguards | Formation of Environment Management Cell by the project proponent |

(B) ENVIRONMENTAL MONITORING PLAN

The environmental monitoring programmed is a vital process in the management Plan for any construction project. This helps in signaling the potential problems that would result from the proposed project and will allow for prompt implementation of effective corrective measures. The environmental monitoring will be required during construction and operational phases.

Water Quality and Public Health

Since water contamination leads to various water related diseases, the project authorities shall establish a procedure for water quality surveillance and ensure safe water for the consumers. A detailed epidemiological study related to water borne diseases shall be carried out and the data shall be compiled for every year in the project area. This data would help the authority in finding out the trends for incidence of water related diseases prevalent in the area, which would help them to take suitable remedial measures for reducing or eradicating the occurrence of these diseases in future.

Water quality parameters shall be monitored before and after the completion of the project. Monitoring shall be carried out on quarterly basis to cover seasonal variations. Water quality shall be analyzed by applying the standard techniques. The parameters recommended for monitoring are as follows :

| | |
|--|--|
| <ul style="list-style-type: none">• pH• Dissolved Oxygen• Biochemical Oxygen Demand• Chemical Oxygen Demand• Total Dissolved Solids• Total Suspended Solids• Total Alkalinity• Temperature• Total Hardness• Calcium• Temperature | <ul style="list-style-type: none">• Calcium• Magnesium• Iron• Chloride• Sulphate• Nitrate• Fluoride• Total Nitrogen• Total Phosphate• Total Coliforms |
|--|--|

Air and Noise Quality Monitoring

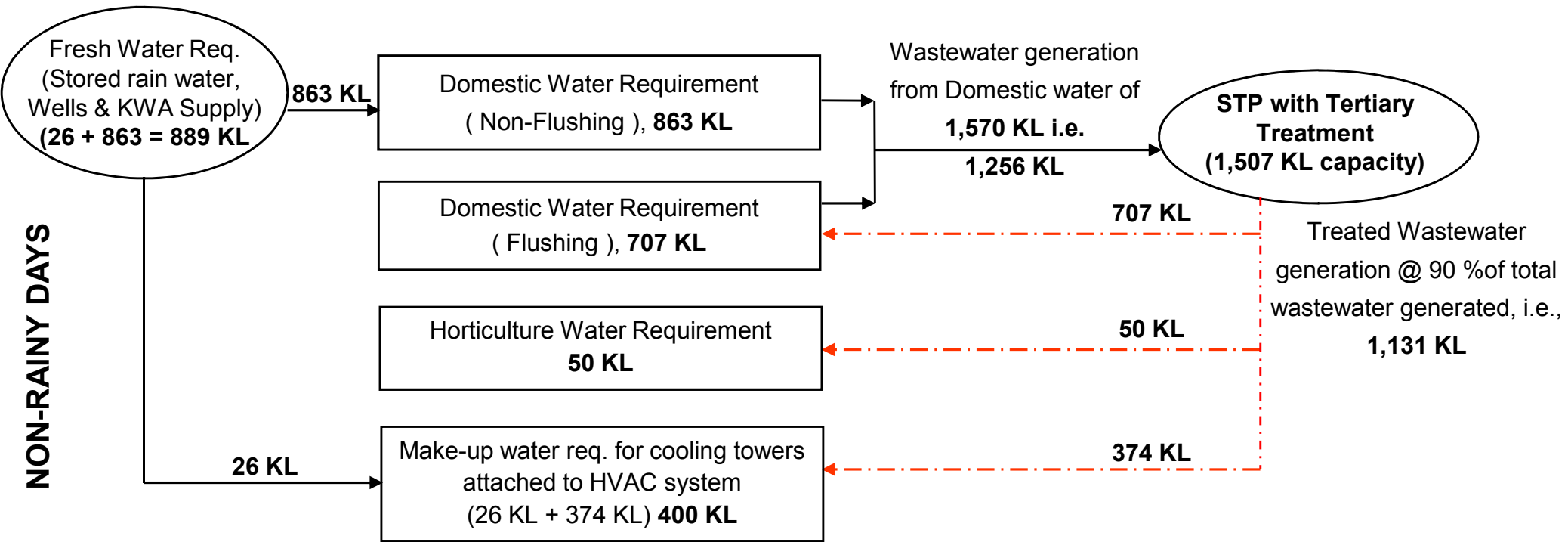
The attributes to be monitored as a part of the mitigation measures are Air Quality, Noise Levels; the monitoring programme for the construction and operation stage.

ACTIVITY WISE POPULATION & DAILY WATER CONSUMPTION DETAILS

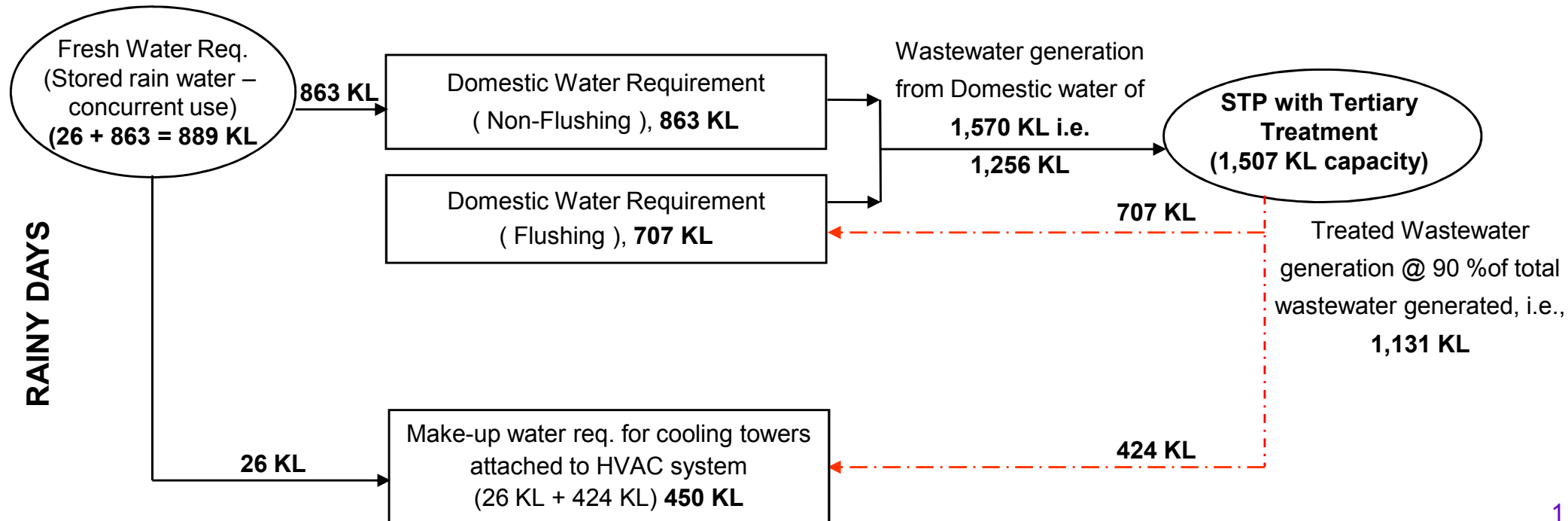
| ACTIVITY | APTS. / CARPET AREA / ROOMS / SEATS | POPULATION | NON-FLUSHING REQ. (in KL) | FLUSHING REQ. (in KL) | TOTAL (in KL) |
|---|---|---|--------------------------------|-----------------------------|------------------------|
| Residential area | 1300 units | 6,500 Persons (5 person / apartments) | 6,500 x 90 Ltr. = 585.00 | 6,500 x 45 Ltr. = 292.50 | 877.50 |
| I.T. Offices | 74,352 sq.m. | 7,435 Persons (1 person / 10 sq.m. of carpet area) | 7,435 x 15 Ltr. = 111.525 | 7,435 x 30 Ltr. = 223.05 | 334.575 |
| Housekeeping staff in I.T. Offices | - | 744 Persons (10% of 7,435 person) | 744 x 15 Ltr. = 11.16 | 744 x 30 Ltr. = 22.32 | 33.48 |
| Retail area (shoppers) | 32,284 | 8,567 Persons (1 person / 3 & 6 sq. m.) | 8,567 x 5 Ltr. = 42.835 | 8,567 x 10 Ltr. = 85.67 | 128.505 |
| Housekeeping staff in Retail area | - | 857 Persons (10% of 8,567) | 857 x 15 Ltr. = 12.855 | 857 x 30 Ltr. = 25.71 | 38.565 |
| Hotel | 115 Rooms | 230 Persons (2 person / Room) | 230 x 275 Ltr. = 63.25 | 230 x 45 Ltr. = 10.35 | 73.60 |
| Hotel staff | - | 115 Persons (@ 1 staff / room) | 115 x 15 Ltr. = 1.725 | 115 x 30 Ltr. = 3.45 | 5.175 |
| Multiplex | 500 seats | 500 Persons | 500 x 5 Ltr. = 2.50 | 500 x 10 Ltr. = 5.00 | 7.50 |
| Housekeeping staff in Multiplex | - | 50 Persons (10% of 500) | 50 x 15 Ltr. = 0.75 | 50 x 30 Ltr. = 1.50 | 2.25 |
| Convention Centre | 2,000 seats | 2,000 Persons (1 person / seat) | 2,000 x 5 Ltr. = 10.00 | 2,000 x 10 Ltr. = 20.00 | 30.00 |
| Convention Centre Staff | - | 200 Persons (@ 10% of 2,000) | 200 x 15 Ltr. = 3.00 | 200 x 30 Ltr. = 6.00 | 9.00 |
| Restaurant/ Foodcourt | 400 seats | 400 Persons (1 person / seat) | 400 x 45 Ltr. = 18.00 | 400 x 25 Ltr. = 10.00 | 28.00 |
| Housekeeping staff in Restaurant / foodcourt | - | 40 Persons (10% of 400) | 40 x 15 Ltr. = 0.60 | 40 x 30 Ltr. = 1.20 | 1.80 |
| | TOTAL | About 27,200 Person on full occupancy | 863.19 Say 863 KL | 706.75 say 707 KL | 1569.95 say 1570 KL |

DAILY WATER CONSUMPTION BALANCE CHART

NON-RAINY DAYS



RAINY DAYS

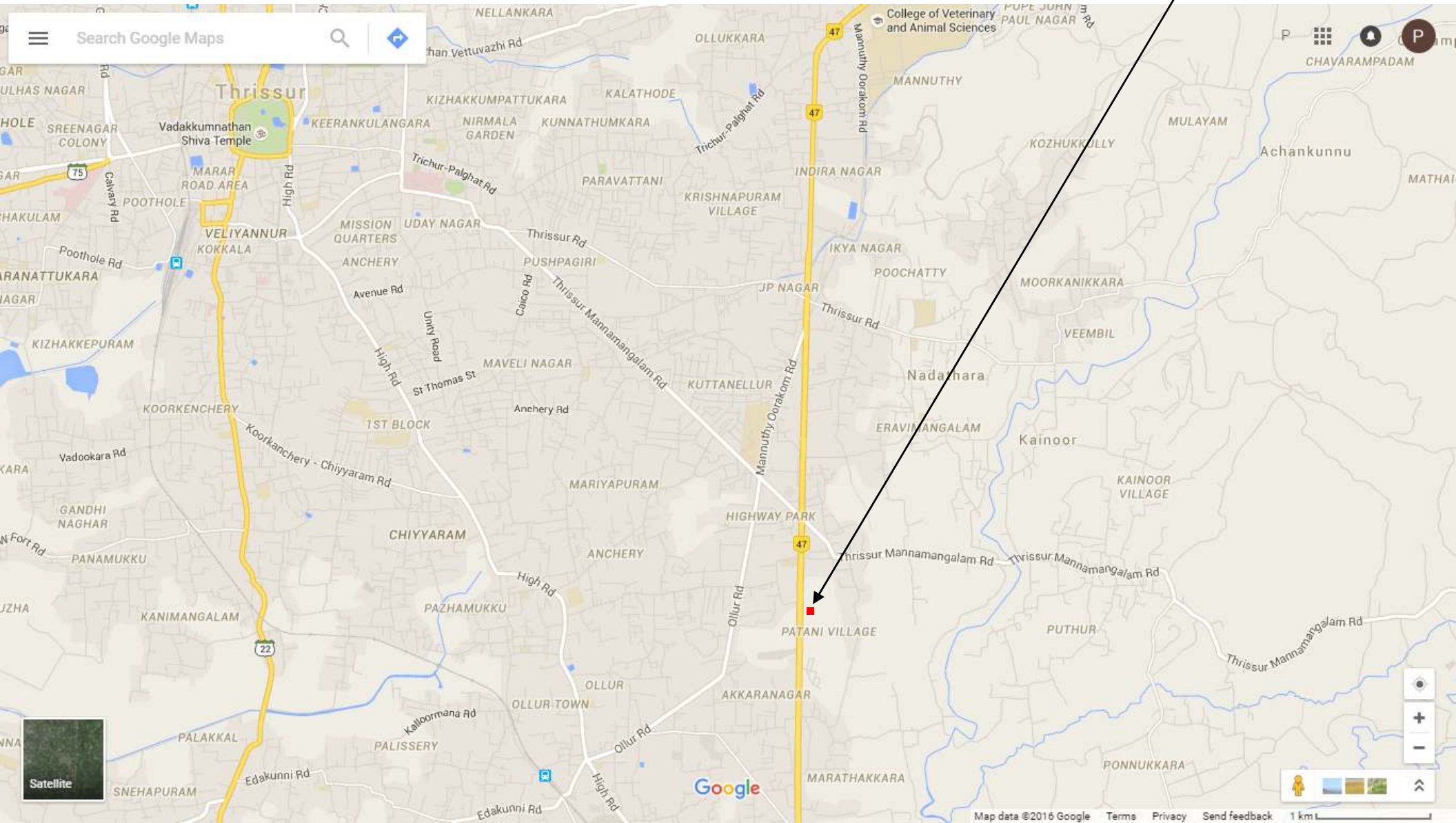


SATELLITE MAP OF THE SITE & SURROUNDINGS



VICINITY MAP OF THE SITE & SURROUNDINGS

Project Site



CONCEPTUAL PLAN

