khb
Building the Future

Ref : KHB/The Platynum/EIA/2017

12 - 05 - 2017

The Director,
I.A. Division – III,
Ministry of Environment, Forests & Climate Change,
Indira Paryavaran Bhavan,
Jor Bagh Road, New Delhi – 110 003.

Sub.:- Environmental Clearance – Expansion of Shopping Mall cum Hotel Project at Survey Nos. 132/2, 132/3, 132/4, 132/13, 132/15, 132/16, Maradu Village, Maradu Municipality, Kanayannur Taluk, Ernakulam District, Kerala – Application – Reg.

Respected Sir,

We are developing an expansion of Shopping Mall cum Hotel project at Survey Nos. 132/2, 132/3, 132/4, 132/13, 132/15, 132/16, Maradu Village, Maradu Municipality, Kanayannur Taluk, Ernakulam District, Kerala. Attached herewith are the following documents for the Environmental Clearance of the same. The documents are:-

1. Duly filled Form – 1 (Appendix I)
2. Duly filled Form – 1A (Appendix II)
3. Conceptual Plan
4. Copy of Environment Clearance from SEIAA, Kerala

You are requested to consider our application and accord Environmental Clearance to the above project at the earliest.

Thanking you,

Yours respectfully,
M/s Kool Homes Builders

Vincent K. M.
President & Authorize Signatory

KOOL HOME BUILDERS, THOTTAKKATTUKARA * ALUVA - 683108

Encl : as above

KOOL HOME BUILDERS
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APPENDIX I

(See paragraph – 6)

FORM 1

(I) Basic Information

Sr. No.	Item	Details
1.	Name of the project/s	**Environmental Clearance for the Expansion (increase in built-up area of 7,920.85 sq.m.) of Shopping Mall cum Hotel Project by M/s KOOL HOME BUILDERS**
2.	S. No. in the schedule	**Category 'A' as per MoEF&CC Notification S.O. 804(E) dt. 14/03/2017.** **8 (a), Construction Project with built-up area 34,920.85 sq.m. (construction in progress at site) 3,00,000 sq. m.**
3.	Proposed capacity / area / length / tonnage to be handled/command area/lease area/ number of wells to be drilled	**Total Plot Area = 0.661 ha. (6,608 sq. m.)** **Total Built-up Area = 34,920.85 sq. m.** **(27,000 sq.m. as per Environment Clearance already obtained from SEIAA). The copy of Environmental Clearance issued by SEIAA Kerala is attached with the application.** **A comparative chart showing the area statement of the project approved as per Environment Clearance order and the activities after the expansion is provided.**
4.	New/Expansion/Modernization	**Expansion**
5.	Existing capacity/area etc.,	**Expansion of the Shopping Mall cum Hotel project. Environment Clearance obtained for the Project from SEIAA vide letter No. 31/SEIAA/KL/3044/2012 dt. 22-02-2013 and the construction work at site for the Shopping Mall cum Hotel Building is in progress.** **Existing area details as per E.C. obtained:-** **Total Plot Area = 0.661 ha. (6,608 sq. m.)** **Total Built-up Area = 27,000 sq. m.**
6.	Category of Project i.e. 'A' or 'B'	**Category 'A' as per MoEF&CC vide Notification S.O. 804(E) dt. 14/03/2017**
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. 132/2, 132/3, 132/4, 132/13, 132/15, 132/16, Maradu Village, Maradu Municipality, Kanayannur Taluk, Ernakulam District, Kerala**
	Plot/Survey/Khasra No.	**Survey Nos. 132/2, 132/3, 132/4, 132/13, 132/15, 132/16**
	Village	**Maradu**

	Tehsil	**Kanayannur**
	District	**Ernakulam**
	State	**Kerala**
10.	Nearest railway station/airport along with distance in Kms	**The nearest railway station is Ernakulam Railway Station which is at about 6 km. and Cochin Int. Airport, Nedumbassery is at about 28 km. away from the project site.**
11.	Nearest Town, city, District Headquarters along with distance in Kms	**Kochi city/town within about 7 km.** **District headquarter – Kakkanad, about 10 km.**
12	Village Panchayats, Zilla Parishad, Municipal Corporation, Local body (complete postal addresses with telephone nos. to be given)	**Village Officer,** **Maradu Village Office,** **Nettoor, Maradu,** **Ernakulam, Kerala-682040.** **Maradu Municipality** **Kundanoor, Maradu (P.O.),** **Ernakulam, Kerala-682040.** **Ph. 0484-2706544.**
13	Name of the applicant	**M/s Kool Home Builders**
14	Registered Address	**N.A.**
	Address for correspondence :	**Mr. VINCENT K.M., President,** **M/s Kool Home Builders,** **VI / 56, N.H. 47 Bypass, Maradu,** **Kochi, Kerala-682304.**
	Name	**Mr. VINCENT K.M.**
	Designation (Owner/Partner/CEO)	**President**
	Address	**Mr. VINCENT K.M., President,** **M/s Kool Home Builders,** **VI / 56, N.H. 47 Bypass, Maradu,** **Kochi, Kerala-682304.**
	Pin Code	**Kerala-682304**
	E-Mail	**vincentkmvent@gmail.com &** **sathyan.nair@koolhomebuilders.com**
	Telephone No.	**0484 - 300 7015 / 300 7000** **Mobile No. 09388615639 / 08590 95 7015**
	Fax No.	**Nil**
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,	 **NO** **NO**

	1972? (c) The C.R.Z Notification,2011 ?	**NO**
22	Whether there is any Government Order/Policy relevant/relating to the site?	**NO**
23	Forest land involved (hectares)	**NO**
24	Whether there is any litigation pending against the project and/or land in which the project is propose to be set up? (a) Name of the Court (b) Case No. (c) Orders/directions of the Court, if any and its relevance with the proposed project.	**NO**

(II) Activity

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

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 use (with respect to local land use plan)	**Yes**	**There will be permanent change in land use, land cover or topography including increase in intensity of land use.** **The project site is located within the Municipality limits of Maradu Municipality, Ernakulam District, Kerala.** **The present project is the expansion of the shopping mall cum hotel project. Environmental Clearance to the existing project was granted by SEIAA Kerala vide No. 31/SEIAA/KL/3044/2012 dt. 22-02-2013 and construction work is in progress at site.** **During operation phase, on full occupancy of shopping mall cum hotel project, the maximum population expected is 3,178 persons (including staff & visitors - floating population on full occupancy) and hence there is increase in the intensity of land use.** ***(Source: population is calculated based on NBC).***
1.2	Clearance of existing land, vegetation and buildings?	**Yes**	**There were some native species of trees and different varieties of shrubs, herbs, grass & climbers at site.** **For the development of the project, these species were cleared.** **Also there were 4 nos. old buildings**

			existing at site which were cleared from the site.
1.3	Creation of new land uses?	**Yes**	**The new land use will be for shopping mall cum hotel project.**
1.4	Pre-construction investigations e.g. bore houses, soil testing?	**Yes**	**Pre-construction Soil Investigation has been carried out for the site. As per the soil investigation report, the water table is encountered upto a depth of about 0.25 m. to 0.8 m. below the ground level.**
1.5	Construction works?	**Yes**	**Construction of Shopping mall cum Hotel project. Internal roads for movement inside the complex are constructed.**
1.6	Demolition works?	**No**	**Not applicable**
1.7	Temporary sites used for construction works or housing of construction workers?	**Yes**	**Temporary sheds are constructed for housing of construction workers (about 75 persons).**
1.8	Above ground buildings, structures or earthworks including linear structures, cut and fill or excavations	**Yes**	**Structural work for the shopping mall cum hotel building project is almost completed.**
1.9	Underground works including mining or tunneling?	**Yes**	**No underground works including mining / tunneling required except the foundation work for the structures.**
1.10	Reclamation works?	**No**	**Not applicable**
1.11	Dredging?	**No**	**No dredging work required.**
1.12	Offshore structures?	**No**	**No offshore structure required.**
1.13	Production and manufacturing processes?	**No**	**No production / manufacturing process involved.**
1.14	Facilities for storage of goods or materials?	**Yes**	**Separate raw material store of cement and other construction materials is made within the project premises. Bricks and steel laid in open.**
1.15	Facilities for treatment or disposal of solid waste or liquid effluents?	**Yes**	**Construction phase :-** **The non-biodegradable waste and other packaging material are sold to the vendors. The bio-degradable solid waste is disposed in a bio-bin system for microbial composting and a mobile STP for the treatment of domestic sewage from the labourers.** **Operation phase :-** **Solid waste generation from the site will be about 429 Kg / day and which 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 sold to the vendors. The biodegradable waste would be sent to the bio-gas generation plant to be developed within the premises. Further, the spent oil from the D.G. sets (defined as hazardous waste) will be sold to C.P.C.B.**

			approved recyclers. **Effluent :- The domestic sewage about 88 KL/day will be generated which will be treated through Sewage Treatment Plant within the project premises.**
1.16	Facilities for long term housing of operational workers?	**No**	**The project is commercial complex project and no accommodation facility is proposed for the operational workers.**
1.17	New road, rail or sea traffic during construction or operation?	**No**	**Not applicable**
1.18	New road, rail, air waterborne or other transport infrastructure including new or altered routes and stations, ports, airports etc?	**No**	**Not applicable**
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?	**No**	**Not applicable**
1.22	Stream crossings?	**No**	**No stream crossings in the project.**
1.23	Abstraction or transfers of water form ground or surface waters?	**No**	**Yes, abstraction of water from ground through well.**
1.24	Changes in water bodies or the land surface affecting drainage or run-off?	**No**	**Not applicable**
1.25	Transport of personnel or materials for construction, operation or decommissioning?	**Yes**	**Transportation of personnel / material during the construction and operation phase is envisaged. In the construction phase, approx. 4-5 trucks / day is envisaged for transportation of materials.**
1.26	Long-term dismantling or decommissioning or restoration works?	**No**	**Not applicable**
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?	**No**	**The project is shopping mall cum hotel project and the project would provide job facilities for about 388 persons in the operation phase and about 75 nos. of labourers (skilled/unskilled) during construction phase.** **Further, on full occupancy of the project,**

			maximum population expected is 3,178 Persons (floating population) and hence there will be influx of people to the project area.
1.29	Introduction of alien species?	**No**	**Not applicable**
1.30	Loss of native species or genetic diversity?	**Yes**	**There were some native trees, shrubs, herbs and grass at site and these were lost during site development.**
1.31	Any other actions?	**None**	**Nil**

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**	**Plot area of 0.661 ha. is earmarked for shopping mall cum hotel project and the construction work at site is under progress.**
2.2	Water (expected source & competing users) unit: KLD	**Yes**	**Construction phase :–** **The water consumption during construction phase is for meeting the domestic requirement (5 KLD) of the construction labourers and for construction purposes water requirement (10 KLD).** **The source of water is from stored rain water & well water.** **Operation phase :-** **The total daily water consumption for the project during operation would be 110 KLD (which includes fresh water requirement of 91 KLD) (taken @ 45 LPCD for staffs & 15 LPCD for shoppers & 180 LPCD for hotel guest). The sources of water during operation phase for the commercial project are:-** **1. Roof Rain water (Non-flushing req.) (Rainy days-Concurrent use)** **2. Stored rain water / well water / KWA supply (Non flushing req.) (non-rainy days)** **3. Treated waste water from STP (Flushing Req.) (Entire Year)** **The details regarding the water consumption related items are provided at daily water balance chart and daily water consumption chart attached.**
2.3	Minerals (MT)	**No**	**Not Applicable**
2.4	Construction material – stone, aggregates, sand / soil (expected source-MT)	**Yes**	**Steel : 21,060 MT** **M-Sand: 45,215 Cu. Mtr.** **Hollow Blocks & Cement blocks : 29,096 Cu.m.** **Cement : 1,80,413 Bags** **The construction materials are brought from local suppliers available in the area.**

2.5	Forests and timber (source – MT)	**Yes**	**Wood is used for frame of doors however recyclable wood is used for doors.**
2.6	Energy including electricity and fuels (source, competing users) Unit: fuel (MT), energy (MW)	**Yes**	**Total Power Req. : 9,500 kWh/day Power Source: Kerala State Electricity Board. Total capacity of D.G. Sets (500 kVA x 4 nos.) (Standby power back up arrangement) 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.

S. N.	Information/Checklist confirmation	Yes / No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
3.1	Use of substances or materials, which are hazardous (as per MSIHC rules) to human health or the environment (flora, fauna, and water supplies)	**Yes**	**This is a shopping mall cum hotel 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**	**Suitable drainage and waste management measures will be adopted in both construction and operation phases which will restrict stagnation of water or accumulation of water within the site & the 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 to avoid occurrence of disease.**
3.3	Affect the welfare of people e.g. by changing living conditions?	**Yes**	**The project is a shopping mall cum hotel project and thereby due to the project development the standard of living index of the people around the project site will definitely improve. Also there will be various ancillary activities like convenient shops, transport facilities etc. attached to the project which will benefit the local people and change their living condition.**
3.4	Vulnerable groups of people who could be affected by the project e.g. hospital patients, children, the elderly etc.,	**No**	**Not applicable. There is no storage of any material within the site which will affect the vulnerable groups of people.**
3.5	Any other causes	**None**	

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 was used for back filling purposes.**
4.2	Municipal waste (domestic and or commercial wastes)	**Yes**	**There is about 30 kg of municipal solid waste during construction phase.** **The Municipal solid waste generated due to operation of the project would be about 429 Kg/day on full occupancy.**
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. The list of authorized recyclers are M/s Perfect Alloys, Chengannur, M/s Peejay Enterprises, Thiruvalla, M/s Excel Petrochemicals, Kochi & M/s Cee Jee Lubricants, Aluva are the approved recyclers for discarded batteries & used oil located in Kerala.** **Used oil will be stored in HDPE drums in isolated covered facility.**
4.4	Other industrial process wastes	**No**	**Not applicable**
4.5	Surplus product	**No**	**Not applicable**
4.6	Sewage sludge or other sludge from effluent treatment	**Yes**	**The sludge from S.T.P. will be partially recycled for enhancing biological treatment and the excess sludge will be sent to the filter press and the de-canted sludge will be sent to the modified BARC model bio gas plant and the manure produced will be used in green area during operation phase. The bio gas produced will be used within the site.**
4.7	Construction or demolition wastes	**Yes**	**Construction waste will be used for back filling purposes.**
4.8	Redundant machinery or equipment	**No**	**Not applicable**
4.9	Contaminated soils or other materials	**No**	**Not applicable**
4.10	Agricultural wastes	**No**	**Not applicable**
4.11	Other solid wastes	**Yes**	**Some horticulture waste will be generated and it will be sent to bio-gas plant facility**

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 commercial project does not envisage any major air pollutant generating sources except D.G. Sets and vehicular movement during construction phase and operation phase. It is proposed to have a D.G. set of 62.5 kVA x 1 no. capacity during construction phase and (500 kVA x 3 nos. + 500 kVA x 1 no.) during operation phase.**
5.2	Emissions from production processes	**No**	**Not applicable. No production activity envisaged.**
5.3	Emissions from materials handling including storage or transport	**Yes**	**This is restricted only in the construction phase and within the project site only.**
5.4	Emissions from construction activities including plant and equipment	**Yes**	**Dust were generated during unloading of construction materials, drilling and grinding operations etc. This is restricted to the construction phase and within the project site only.** **The other source of emission is from D.G sets of 62.5 kVA of 1 no. which is used during construction phase.**
5.5	Dust or odours from handling of materials including construction materials, sewage and waste	**Yes**	**During construction phase dust is generated during the handling of construction materials. Sprinklers for suppression of dust are installed during construction phase to minimize the dust generation.** **Wind breakers (i.e. barricades with GI sheets) at all vulnerable sides (all along the nearby houses) to control the dust.**
5.6	Emissions from incineration of waste	**No**	**Not applicable, no incineration 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**	**During construction, the machinery used for construction was of highest standards with reputed make and are adhere to international standards. These standards itself take care of**

			noise generated from these machines. The construction involved low rise shopping mall cum hotel project of 1 building, no heavy machinery is required. Hence insignificant impacts due to construction machinery are envisaged. **Apart from this, construction activities are restricted to day time only.** **Noise barriers all along the project boundary are created. Also the marble / tile cutting area noise barrier enclosures were created at appropriate height.**
6.2	From industrial or similar processes	**No**	**Not applicable**
6.3	From construction or demolition	**Yes**	**Due to the various construction activities, there are short term noise impacts in the immediate vicinity of the project site. The construction activity was included the following noise generation activities:** **Operation of D.G. Sets, concreting mixing and excavation.**
6.4	From blasting or piling	**No**	**No blasting / pilling were adopted in the construction process.**
6.5	From construction or operational traffic	**Yes**	**Some amount of noise is generated from vehicular movement in the project premises.**
6.6	From lighting or cooling systems	**No**	**The lighting used / proposed within the project area during construction phase and operation phase are limited to the permissible lux level.** **The project is shopping mall cum hotel project thereby the buildings are centrally air conditioned (except some portion) and HVAC cooling system will be installed in the project.**
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.
7.2	From discharge of sewage or other effluents to water or the land (expected mode and place of discharge)	**No**	**Sewage will be disposed off through Sewage Treatment Plant within the premises. There is no chance of spillage or discharge of sewage and all the sewage will be chanalized properly through closed pipes to the STP. The sewage after treatment will be utilized for flushing, horticulture & 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 HSD 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 a shopping mall cum hotel project and the chances of explosions, spillages, fire are minimal.** **During construction all the labours were provided suitable personal protective equipment (PPE) as required under the health & safety norms. Training and awareness about the safety norms provided to all supervisors and labours involved in construction activity.** **An agreement was 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 as per norms.**
8.2	From any other causes	**No**	**Not applicable**
8.3	Could the project be affected by natural disasters causing environmental damage (e.g. floods, earthquakes, landslides, cloudburst etc)?	**No**	**As per seismic classification, the project site falls in Zone-III. No reported cloudburst in the area. Also, there is no hilly area around the project site, there is no chance of landslide.** **Structural design aspects as per the seismic codes – IS 1893 (2002), IS 13920 (1993) and IS 456 (2000) as applicable are incorporated in building structure.**

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

S. No.	Information/Checklist confirmation	Yes / No	Details thereof (with approximate quantities/rates, wherever possible) with source of information data
9.1	Lead to development of supporting utilities, ancillary development or development stimulated by the project which could have impact on the environment e.g.:		**Appropriate infrastructure like roads, power supply, waste management and waste water treatment will be developed within the site so that chances of occurrence of any adverse impacts are minimized.**
	• Supporting infrastructure (roads, power supply, waste or waste water treatment, etc.)	**Yes**	**During construction skilled, unskilled and professional work force including temporary and permanent employees are hired locally in order to generate the employment to the local people. While during the project operation stage for the purpose of day-to-day maintenance, workers will be employed. Moreover, more employment will be created as a result of positive induced development in the immediate vicinity of project site.**
	• housing development • extractive industries • supply industries • other	**No** **No** **No** **No**	**Not applicable** **Not applicable** **Not applicable** **Not applicable**
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	**No**	**Not applicable**
9.4	Have cumulative effects due to proximity to other existing or planned projects with similar effects	**No**	**Not applicable**

(III) Environmental Sensitivity

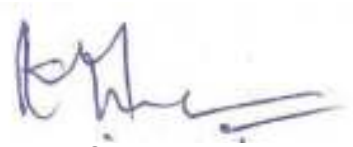
S. No.	Areas	Name/ Identity	Aerial distance (within 15 km.) Proposed project location boundary
1	Areas protected under international conventions, national or local legislation for their ecological, landscape, cultural or other related value	**Dutch palace** **Jewish Synagogue**	**At about 7 km., Mattancherry** **At about 7 km., Mattancherry**
2	Areas which are important or sensitive for ecological reasons -	**Vembanad backwater**	**Vembanad backwater feeder line is located at western side beyond the**

	Wetlands, watercourses or other water bodies, coastal zone, biospheres, mountains, forests	**Arabian Sea** **Mangalavanam Bird Sanctuary**	**National Highway at about 120 m. from the project site.** **About 8 km.** **At about 7 km.**
3	Areas used by protected, important or sensitive species of flora or fauna for breeding, nesting, foraging, resting, over wintering, migration	**Mangalavanam Bird Sanctuary**	**At about 7 km.**
4	Inland, coastal, marine or underground waters	**Vembanad backwater** **Arabian Sea**	**Vembanad backwater feeder line is located at western side beyond the National Highway at about 120 m. from the project site.** **About 8 km.**
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	**NH-47**	**The project site is located near NH-47 highway.**
7	Defense installations	**Kochi CSD Depot** **Kochi Naval Airbase**	**About 4.5 km.** **Located at about 5 km.**
8	Densely populated or built-up area	**Maradu Municipality**	**Project site is within the municipal limit and is a densely populated.**
9	Areas occupied by sensitive man-made land uses *(hospitals, schools, places of worship, community facilities)*	**Hospitals, schools, places of worship, community facilities**	**Located within 15 km. around the site**
10	Areas containing important, high quality or scarce resources *(ground water resources, surface resources, forestry, agriculture, fisheries, tourism, minerals)*	**No**	**Not applicable**
11	Areas already subjected to pollution or environmental damage. *(those where existing legal environmental standards are exceeded)*	**No**	**Not applicable**
12	Areas susceptible to natural hazard which could cause the project to present environmental problems (*earthquakes, subsidence, landslides, erosion, flooding or extreme or adverse climatic conditions*)	**No**	**The project area and it's 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 report of landslides in and around the project site.**

(IV). Proposed Terms of Reference for EIA studies

Ans. The project is having built-up area 34,920.85 sq. m. (27,000 sq. m. as per EC obtained and 7,920.85 sq. m. is expansion area) which is less than 1,50,000 sq.m. and therefore, as per EIA Notification, 2006, the project falls under 8 (a) and hence EIA Studies is not required for this project.

"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 : **Kochi, Kerala**

Mr. VINCENT K.M., President,
For M/s Kool Home Builders,
VI / 56, N.H. 47 Bypass, Maradu,
Kochi, Kerala-682304.

****

APPENDIX II

(See paragraph 6)

FORM-1 A

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

(Environmental Clearance for Expansion of Shopping Mall cum Hotel Project by M/s KOOL HOME BUILDERS)
at
(Survey Nos. 132/2, 132/3, 132/4, 132/13, 132/15, 132/16, Maradu Village, Maradu Municipality, Kanayannur Taluk, Ernakulam 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 project site is located within the Municipality limits of Maradu Municipality, Ernakulam District, Kerala.
The vicinity map and the satellite map showing the location of the project site & it's surroundings is attached. The photographs of the site are attached. The topographical survey map showing the topographical levels of the site is attached. The layout plan & building plan is enclosed. The conceptual plan showing the location of STP, Solid waste processing area, landscape area, parking area, rain water storage tanks, location of wells, building blocks, entry & exit to the site, internal traffic circulation within the site and surrounding etc. is attached.
There is exists of City Development Plan (C.D.P. The City Development Plan (C.D.P.) of Kochi which covers the geographical areas of Maradu Municipality. This C.D.P. covers the external infrastructural services available / proposed viz. water supply, electricity supply, storm water drainage & sewage facility, road connectivity, common solid waste disposal facility, fire fighting and health & educational institutions.

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 construction projects are mentioned below:-

Objective of the project	**=**	**Shopping Mall cum Hotel project**
Facilities in the project	**=**	**136 Service apartments in hotel, Restaurant/food court, conference hall with swimming pool & Shopping mall with first aid room.**

Total Cost of the Project = Rs. 95 Crores

Total plot area	0.661 ha. (6,608 sq. m.)	
	Permissible	Proposed
Ground Coverage	3,304 sq.m. (50%)	3,243.89 sq.m. (49.09%)
Total open area	3,304 sq.m. (50%)	3,364.11 sq.m. (50.91%)
FAR	26,432 sq.m. (@4.0)	21,463.11 sq.m. (@3.2)
Total Built-up area (FAR + Non-FAR area)	---	34,920.85 sq. m. (Built-up area as per EC obtained is 27,000 sq. m. + 7,920.85 sq. m. is expansion area)

A comparative chart showing the details of the project mentioned in the Environment Clearance order and the activities after the expansion is provided.

Max. height of the building = 44.95 m.

Total Domestic Water Req. = 110 KL / day

Sewage Generation = 88 KL / day

Sewage Disposal Facility = Sewage Treatment Plant & Recycling

Treated Water Available from STP = 80 KL / day

Source of Water = Roof Rain water (Non-flushing req.) (Rainy days-Concurrent use),
Stored rain water / well water / KWA supply (Non flushing req.) (non-rainy days) &Treated waste water from STP (Flushing Req.) (Entire Year)

The details of the daily water requirement balance chart (rainy days & non – rainy days) is provided. Also attached is the activity wise population & daily water consumption details are attached.

Total Power Requirement = 9,500 kWh/day

Source of Power = Kerala State Electricity Board &
D.G. Sets (standby)

Capacity of D.G. Sets = 500 kVA x 4 nos.

Parking Provided = 351 Cars + 445 Two wheelers

***Connectivity* :-**
The access road to the project site is from 45 m. wide N.H. 47 Byepass which is well connected to entire city.
The nearest railway station is Ernakulam Railway Station which is at about 6 km. and Cochin Int. Airport, Nedumbassery is at about 28 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 project site is located within Maradu Municipality, Ernakulam District, Kerala. There would be no negative impacts on the existing facilities adjacent to the site. The project has provision for (i) Treatment of sewage and it's fully recycling thereby there is no discharge outside the project premises during rainy days and during non rainy days (ii) The project has made provision for rain water storage tank which will be used as concurrent source of water during rainy days and for non-rainy days. (iii) By the BARC model Bio-gas generation plant installed within the project site, the bio-degradable solid waste disposal will be managed within the site thereby no disposal outside the site.(v) There are various native species of trees, shrubs, herbs etc existing at site as part of floral ecology. Some of the native species were cut for development of the site. As part of the eco restoration, large number of saplings of native species would be planted. Due to the eco restoration, the impact to floral and faunal ecology will be short term.

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. There will be no significant land disturbance occur due to the construction project. The project site falls within Zone-III as per the seismological classification map of India. There is no history of subsidence of the project site or it's surroundings in the past. There is a level difference of about ± 0.75 m. and the slope is towards north side of the project site.

The ground water table is 0.25 m. to 0.80 m. The bore hole soil profile data of the site is provided.

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. There is a level difference of about ± 0.75 m. and the slope is towards north side of the project site. The topographical map showing the natural drainage of the project site is provided. The site development does not affect the drainage pattern of the site and surroundings. There is a storm water drain available abutting the access road (N.H. 47 Byepass) to the project site.

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. Earthwork for the foundation of structures was carried out. The total excavated earth was about 11,500 cu.m. The top soil (800 cu.m.), which was fertile and kept at site for landscaping work. About 2,700 cu.m. soil were used for back filling work and 3,800 cu.m. soil were used for internal road construction and excess excavated earth were stored in the land of the project proponent at another place.

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

Ans. The construction work at site is almost complete. About 75 workers (average) during construction phase are hired at site. The water requirement during construction period is from the well water, KWA & stored rain water. Further, by using of ready mix concrete (RMC) & curing agents, the water is reduced substantially. The major part of the construction water requirement is fully consumed. The sewage generation

from labourers is disposed through mobile STP. The non bio-degradable waste, the empty cement bags, other packaging materials etc. are disposed to the vendors. The bio-degradable solid waste from the labour colony is disposed in a bio-bin system for microbial composting.

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 consists of earth, debris concrete, lumber, masonry and cardboards which are about 35%, 15%, 12% and 10% respectively. Construction waste was disposed for backfilling purposes.

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. The construction water requirement is expected to be 10 KL/day and for domestic purposes is estimated to be 5 KL/day. The water requirement during the construction phase will be met from the wells & rain water storage tanks, KWA.

The total daily water requirement, water balance chart and source of water during the operation phase of the project calculated on the basis of full occupancy are mentioned below: -

Total Domestic Water Req.	**= 110 KL / day (which includes 91 KLD of fresh water req.)**
Sewage Generation	**= 88 KL / day**
Sewage Disposal Facility	**= Sewage Treatment Plant & Recycling**
Treated Water Available	**= 80 KL / day**
Source of Water	**= Roof Rain water (Non-flushing req.) (Rainy days-Concurrent use), Stored Rain Water / Wells / KWA water supply (Non flushing req.) (non-rainy days) & Treated waste water from STP (Flushing Req.) (Entire Year)**

The project has made provision for rain water storage tank will be used for the concurrent use of water and hence as source of water during rainy days & non-rainy days. The source of water for this well water & stored rain water through tanks and hence the availability of water is ensured.

The Water Balance Chart (rainy days & non-rainy days) is attached. The activity wise population & daily water consumption details are attached.

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

Ans. During construction phase, the source is from the wells / KWA water supply & recycled water from STP & rain water storage tank. With the estimated construction phase water requirement of about 15 KL/day (5 KDL + 10 KLD) extending for a period of about 3 months, this source is

dependable. The source of water for the project during operation phase will be water from the Rain water collection tank (230 KL x 1 no.) within the site of for meeting the water requirement for non-flushing (during rainy days). During non-rainy days, the source of water is from stored rain water, Public supply & for well water for meeting the non-flushing water requirement. The treated waster from STP would meet the water requirement for flushing, horticulture & cooling requirements. Therefore by these sources and by an integrated water management approach, a dependable source of water is ensured. Further details are provided in water balance chart which is provided. Also the yield test report is enclosed.

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 project will be from stored rain water during rainy days & non-rainy days for non-flushing purposes & treated sewage for meeting the flushing water requirement. Also for the drinking purposes KWA water supply will also be another source of water to the project. Also, it is proposed to have WTP for filtration & disinfection of rain water before its use. The water quality of the well at site is collected and analyzed through an approved laboratory. It is observed that the analyzed values physical, chemical parameters of the well water analyzed is fit for potable purposes to meet the drinking water standards as per IS 10500. Also attached is the well water quality report.

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 quantity of treated water from STP which is fit for recycling to meet the flushing requirement (55 KLD), horticulture (1 KLD) & excess to the cooling 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. Since there is minimal dependency on public supply (only for drinking), there is no diversion of water from other users. The water supply for the project is from stored rain water, well water and recycled water and hence there will be minimum impact to the surrounding.

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 project activity because the whole waste water of this project would be treated through S.T.P. within the project area and the treated water from S.T.P will be fully re-used during non rainy days and no discharge outside the project site during rainy days.

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

Ans. One of the source of water for the project will be water from stored rain water in tanks to be constructed within the site for meeting the water requirement for non-flushing activities. The capacity of the rain water storage tank requirement is = ground coverage of the building x 25 ltr. as per KMBR. The statutory requirement works out to be about 81 KL. However, provision is made for storage of 230 KL which is about 2.8 times of the statutory requirement.

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. As per the soil investigation report, the ground water is higher level. Due to this factors, the percolation to the ground before the site development is very poor. Further, it is proposed to have a rain water storage tanks. Due to these measures, there would not be any incremental load and will not cause any flooding or water logging. The excess runoff from the site before discharge outside will be passed through a de-siltation cum oil removal unit.

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. Pre-construction Soil Investigation has been carried out for the site. As per the soil investigation report, the ground water table is at higher level. The source of water for the project will be water from Rain water storage tanks for meeting the water requirement during rainy days-concurrent use and stored for non-rainy days and well water at site for meeting the water requirement for non-flushing activities and water supply from Kerala Water Authority and hence the availability of water is ensured and due to the reasons mentioned above, the dependency on ground water will be minimal.

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 is partially channelized to the rain water storage tank. The excess runoff is channelized from the site after de-silting and oil removal and therefore, the run-off is not contaminate the land and 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 roof run-off from the site will be appropriately channalised to the storm water collection tank to be constructed within the site and surface run-off will be connected to the external storm water drain available at site. The topographical map showing the natural drainage network within the site is provided with the application. The surface runoff will be properly channelized.

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 project has provision of STP for treatment of sewage during the construction period to handle the sewage. Due to have dedicated staff for good house keeping of the construction site premises and the labourer premises there is good hygienic conditions around the area.

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 STP of 5 KL capacity for the treatment of sewage during construction phase and STP of 106 KL capacity within the project premises to treat the sewage during operation phase. The treatment theory is based on MBBR technology. The total quantity of sewage generation will be 88 KL/day. The treated water will be fully recycled for meeting the flushing, horticulture & cooling water requirement. There will be no sewage discharge from the project premises after development.

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 water from the Sewage Treatment Plant during the operation phase of the project will be used for flushing, horticulture & 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. There were some of native species of trees and different varieties of shrubs, herbs, grass & climbers at site. For the development of the project, these species were cleared.

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. There were some of native species of trees and different varieties of shrubs, herbs, grass & climbers at site. For the development of the project, these species were cleared.

As per the "*Kerala Promotion of Tree Growth in Non-Forest Areas (Amendment) Act, 2007*", no permission is required for cutting of these trees.

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. It is proposed to have large number (mostly flowering, medicinal & shady trees) of tree plantation (native species) within the project area.

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 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 project after the 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 project is shopping mall cum hotel project and it will not increase atmospheric concentration of gases, the project has provision of D.G. Sets for standby arrangement of electricity and will run only during power failure. The stack attached to the 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 site carried out through an approved laboratory and the ambient air quality report is attached.

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 the project development. The dust generation during construction phase is controlled by enclosures at appropriate locations and also by sprinkling of water for suppression of dust.

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 project would provide vehicle parking facilities within the project premises. The parking plan for this project would follows KMBR guidelines. The total number of parking provided is 351 cars + 445 Two wheelers. The conceptual plan clearly shows the internal traffic management with entry and exit to the project site. The site development will provide minimum drive way as per KMBR at all around the building block for easy & smooth vehicular movement.

The access road to the project site is from 45 m. wide N.H. 47 Byepass which is well connected to entire city.

The nearest railway station is Ernakulam Railway Station which is at about 6 km. and Cochin Int. Airport, Nedumbassery is at about 28 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 project site, all internal roads with width, pedestrian path ways etc. The total area earmarked for internal roads. Further provision of ramps is provided for the easy access to the building 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 project is a shopping mall cum hotel 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 and the parking arrangement which is planned, 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.

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. The D.G. sets which would be used for the project will be 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 is carried out through an approved laboratory and the ambient noise level report is attached.

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 natural feature of aesthetics located in the immediate vicinity of the project site.

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

Ans. The project site surrounded with commercial, residential, institutions and in the south east side the project site is access road the project site i.e. 45 m. wide N.H. 47 Byepass. There will be no any adverse impacts due to the development of the project.

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 project would be constructed in conformity with the Kerala Municipal Building Rules (KMBR).

There is exists of City Development Plan (C.D.P. The City Development Plan (C.D.P.) of Kochi which covers the geographical areas of Maradu Municipality. This C.D.P. covers the external infrastructural services available / proposed viz. water supply, electricity supply, storm water drainage & sewage facility, road connectivity, common solid waste disposal facility, fire fighting and health & educational institutions.

As per seismic classification, the project site falls in Zone-III. No reported cloudburst in the area. Also, there is no hilly area around the project site, there is no chance of landslide. 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.

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 project is located in Maradu Municipal 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 project is a shopping mall cum hotel project. During operation phase, on full occupancy of the project, the maximum population expected is 3,178 persons (floating) and hence there will be influx of people (fixed) to the project area and surrounding.**

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, which are located around the project. The vicinity map showing the surrounding details of the project site is provided.

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 project is a shopping mall cum hotel project and thereby the living index of the people around the project site will definitely improve. Also there will be various ancillary activities like convenient shops, transport facilities etc. attached to the project which will benefit the local people and change their living condition.

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 project is a shopping mall cum hotel project and the building is a centrally air conditioned building, the selection of building materials plays a major role in the energy consumption. The project will make all attempts to use to avoid building materials with high embodied energy. Cement blocks & hollow blocks are replaced with country made red bricks. Further, the river sand is replaced by manufactured sand from stone crushers. The glass used is of 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 possess Pollution Under Control Certificates (PUC). All vehicles are of close body to avoid spread of dust from the loose materials, and vehicles which bring sand, stone dust, etc. also ensure that the above mentioned material are properly wetted during transportation to avoid dust generation. Pucca Roads are 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 was done with GI sheets of 20 ft height in the side abutting the public road 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) was 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 project will generate about 429 Kg/day from the project site.**
- ✓ **The solid waste from the 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).**
- ✓ **The non-biodegradable and recyclable waste would be sold to the vendors.**
- ✓ **The biodegradable waste along with sludge from STP would be sent to the BARC model bio-gas plant to be developed within the premises.**
- ✓ **The bio-gas generated would be consumed in the within the site.**
- ✓ **The manure produced from the bio-gas generation facility would be used for green area development within the premises.**

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 generated after 4-5 years latency period**
- ✓ **Separate earmarked space will be provided for e-waste storage.**
- ✓ **E-waste will be disposed as per E Waste (Management & Handling) Rules, 2012.**

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.**
- ✓ **M/s Pefect Alloys, Chenganpur, M/s Peejay Enterprises, Thiruvalla, M/s Excel Petrochemicals, Kochi and M/s Cee Jee Lubricants, Aluva are the approved recyclers for discarded batteries & used oil located in Kerala.**

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 9,500 kWh/day and will be from by Kerala State Electricity Board. The project will make provision of D.G. Sets (500 kVA x 4 nos.) as standby arrangement of electricity. The project will have provision of power saving and maximum natural light will be provided to minimize energy consumption.

We have applied for IGBC Platinum certification which is in-process.

The building has following features incorporated in it :-

- **Integrated energy conservation systems and energy efficient equipment in all the systems throughout the building.**
- **Performance glass wherever required, including skylight, external glazing**
- **Aerocon blocks for wall**
- **Double glazed glass units for most of the windows**
- **Hybrid Waste heat recovery system from chillers for water heating, saving up to 70% electrical energy.**
- **Heat exchanging system between fresh air supply and toilet exhaust air**
- **Roof Thermal insulation**
- **128 KW Solar PV Panels and 14 kW solar collectors for direct water heating system.**
- **LED lamps throughout the building minimizing the lighting loads.**
- **Total energy saving is expected to be of about 23 %.**

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 (500 kVA x 2 nos. + Additional standby 1 no. of 500 KVA) as standby arrangement of electricity.

9.3. What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?

Ans. The glass used will be low emissivity and the other specifications of the glass will comply with the norms as per ECBC U. The further details are :- Roof will be insulated with vermiculite (50 mm) + brick coba (100 mm) + tiles (25 mm) above the RCC slab (150 mm).

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 plans. The project proponent shall made provision for solar panel system (hot water purpose) in building block area and solar energy devices will be used for street lighting, emergency lighting in the 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 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 commercial building and hence batteries are not required for storage purposes. 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 gird 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.

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 project site. 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, 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 provided within the site to 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 U. The further details are:-

Roof will be insulated with vermiculite (50 mm) + brick coba (100 mm) + tiles (25 mm) above the RCC slab (150 mm).

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 provided 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 includes, an Emergency Control Room, Separate Fire exit during emergency, all rooms with Fire Detector / Smoke Detector, Fire Extinguishes 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 Gandhinagar fire station which is about 5 km. away from the project site. The fire fighting plan is provided.

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 U. The further details are:-

Roof will be insulated with vermiculite (50 mm) + brick coba (100 mm) + tiles (25 mm) above the RCC slab (150 mm).

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.

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 uses of non-conventional source of energy in the construction project are as follows: -

a. Solar Water Heater: -
The project would install solar panels for hot water requirements in the building block 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. 20kwh solar power plant is proposed for the building in the project.

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 Impact	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} & $PM_{2.5}$, SO2 and NOx,

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 sitting) to minimize noise and also reduce its impacts on human health (ear muffs, safe distances, and enclosures).	Site working practices records, noise reading
		No machinery running when not required.	
		Acoustic mufflers / enclosures to be provided in large engines	Mufflers / enclosures in place
Sr. No.	Potential Impact	Action	Parameters for Monitoring
		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 untreated discharge to be made to surface water, ground water or soil	No discharge hoses in vicinity of watercourses.
		The discharge point should be selected properly and sampling and analysis should be undertaken prior to discharge	Discharge norms for effluents as given in consent to operate by PCB.
		Take care in disposal of wastewater generated such that soil and groundwater resources are protected	
4.	Soil Erosion	Minimize area extent of site clearance, by staying within the defined boundaries	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.	Environmental Management Cell/Unit	The Environmental Management Cell / Unit is to be set up to ensure implementation and monitoring of environmental safeguards.	A formal letter from the management indicating formation of Environment Management Cell
II. Operational Phase			
9.	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 NO_x, CO as given by PCC.
		Ambient air quality within the premises of the proposed unit to be monitored. Exhaust from vehicles to be minimized by use of fuel efficient vehicles and well maintained vehicles having PUC certificate.	The ambient air quality will conform to the standards for PM_{10} & $PM_{2.5}$ as given by PCC Vehicles logs to be maintained
		Vehicle trips to be minimized to the extent possible	Vehicle logs
10.	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
11.	Wastewater Discharge	No untreated discharge to be made to surface water, groundwater or soil,	No discharge hoses in vicinity of watercourses
		Take care in disposal of wastewater generated such that Soil and groundwater resources are protected	Discharge norms for effluent
12.	Drainage and effluent Management	Ensure drainage system and specific design measures are working effectively. Design to incorporate existing drainage pattern and avoid disturbing the same.	Visual inspection of drainage and records thereof

13.	Indoor air contamination	Contaminants such as CO, CO2 and VOCs to be reduced by providing adequate ventilation.	Monitoring of indoor air contaminants such as CO, CO2 and VOCs
14.	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
15.	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
16.	Environment Management Cell/Unit	The Environment Management Cell/Unit to be set up to ensure implementation and monitoring of Environmental safeguards	A formal letter from the management indicating formation of Environment Management Cell

(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 complied 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 :

• pH • Dissolved Oxygen • Biochemical Oxygen Demand • Chemical Oxygen Demand • Total Dissolved Solids • Total Suspended Solids • Total Alkalinity • Temperature • Total Hardness • Calcium • Temperature	• 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 is presented in Table given below :-

ENVIRONMENT MANAGEMENT PLAN

CONSTRUCTION PHASE				
Sr. No.	Particulars	Approx. Recurring Cost/Annum (Rs. In Lacs)	Approx. Capital Cost (Rs. In Lacs)	Basis for Cost Estimate
1.	Medical cum First Aid facility	2.0	1.0	A First Aid medical facility with a trained person with first aid kit.
2.	Toilets with STP in the labor colony	0.5	2.0	Toilets and STP
3.	Supply of drinking water for the labourers	3.0	2.0	Rain water from tank with filtration & disinfection & well water
4.	Wind Breakers	0.75	2.0	Wind breakers at the site in the side where it is abutting and other vulnerable areas.
5.	Sprinklers for suppression of dust	1.0	3.0	Sprinklers, pipeline network, online micro filters and pressure pumps
6.	Solid Waste from labour camp & construction site	1.0	2.0	Segregation & bio-bin facility
	TOTAL	**8.25**	**12.0**	

OPERATION PHASE				
Sr. No.	Particulars	Approx. Recurring Cost/Annum	Approx. Capital Cost	Basis for Cost Estimation
		(Rs. In Lacs)		
1.	Sewage Treatment Plant	3.0	20.0	Capital Cost
2.	Water Treatment Plant (WTP)	2.0	6.0	Construction of WTP
3.	Solid Waste Management Plan	6.0	15.0	Coloured bins at appropriate locations & Bio-gas generation plant
4.	Noise Control for D.G. Sets	2.0	6.0	D.G. Sets will be new and will be fitted with acoustic enclosures
5.	D.G. Sets Emission stacking, sampling	1.0	3.0	The capital cost would include cost of providing adequate height of stack, ladder, platform and stack monitoring
6.	Green Area development including Grass Coverage	2.0	8.0	Green Area Development, cost of plants, plantation cost, manure etc.
7.	Rain Water storage tank	6.0	25.0	Construction of Rain Water storage tank
	TOTAL	**22**	**83**	

ENVIRONMENT MONITORING PLAN

CONSTRUCTION PHASE				
Sr. No.	Particulars	Parameters	Frequency	Approx. Recurring cost / Annum (Rs. In Lacs)
1.	Ambient Air	PM_{10} & $PM_{2.5}$, SO_2, NOx, CO	Every three months	1.0
2.	Rain water / well water	As per IS : 10500	Every three months	1.0
3.	Noise Level	24 hrs. Noise Level	Once in a month	1.0
	TOTAL			**3.0**

OPERATION PHASE				
Sr. No.	Particulars	Parameters	Frequency	Approx. Recurring Cost / Annum (Rs. In Lacs)
1.	Ambient Air	PM_{10} & $PM_{2.5}$, SO_2, NOx, CO	Once in a season	1.0
2.	Stack Emission	SPM, SO2 , NOx	Every six months	0.25
3.	Treated Water from STP	pH, BOD, COD, Oil & Grease, TSS, bacteriological parameters	Once in a month	1.0
4.	Rain water & well water	As per IS : 10500	Once in a month	1.0
5.	Noise Level	24 Hrs. Noise Level	Once in a month	0.60
	TOTAL			**3.85**

ENVIRONMENTAL MANAGEMENT PLAN

The Environmental Management System constitutes provision of an Environmental Division, which should be staffed by an Environmental Engineer / Office, and Environmental Assistant and other assistant (miscellaneous works). The task assigned should include supervision and co-ordination of studies, monitoring and Implementation of environmental mitigation measures.

ENVIRONMENT MANAGEMENT / MONITORING CELL

FREQUENCY OF MEETING – ONCE IN THREE MONTHS

(Construction Phase & one year of operation phase)

Sr. No.	Members	Role
1.	Director	Chairman
2.	Project Manager	Member
3.	Health & Safety Officer	Member
4.	Representative of NABL accredited laboratory	Member
5.	Representative of NABET accredited Environmental Consultant	Member
6.	Representative of STP & Bio-bin unit supplier	Member
7.	Project Engineer	Member & Convener

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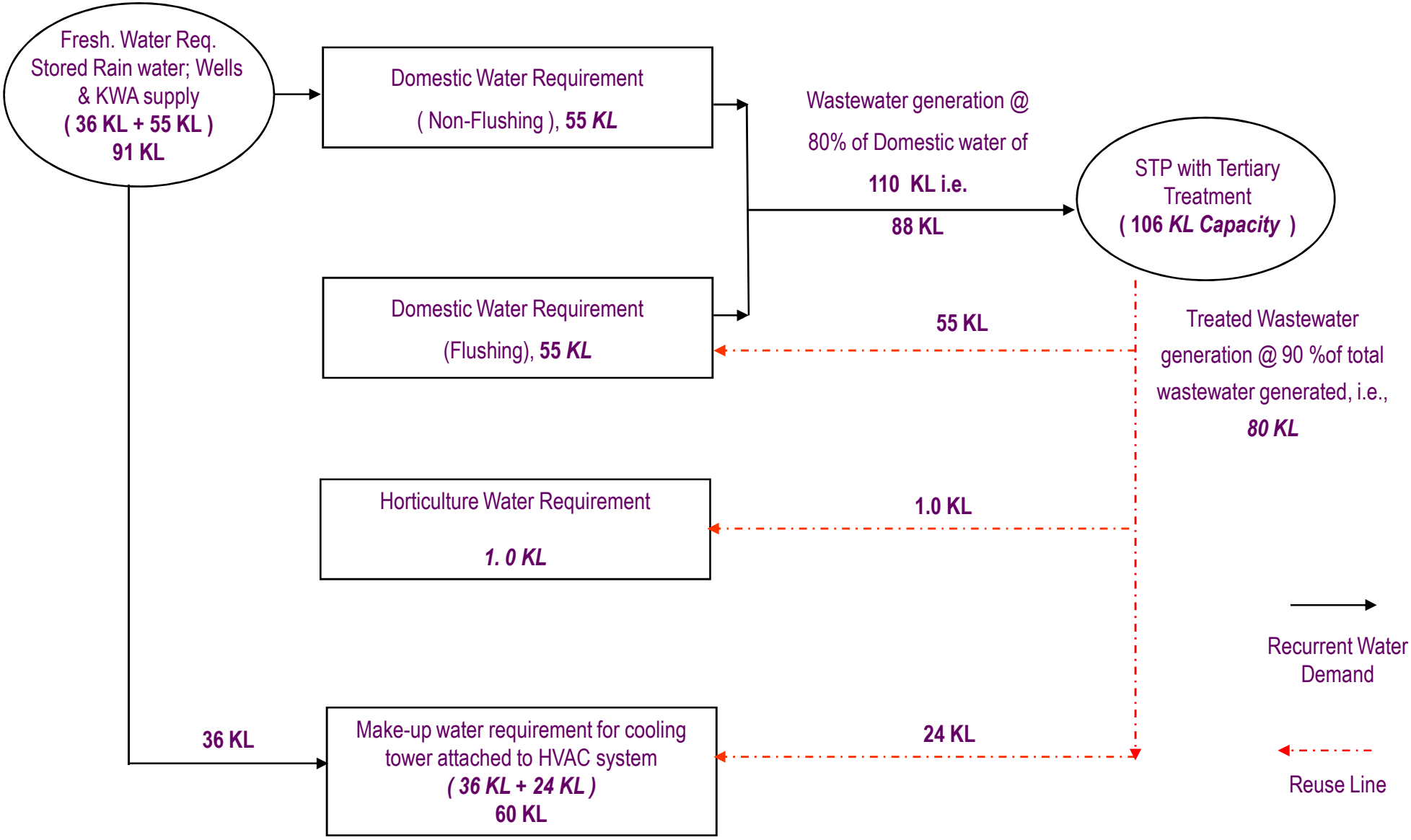
A comparative chart showing the details of the project mentioned in the Environment Clearance order and the activities after the proposed expansion

DETAILS	AS PER E.C. OBTAINED (A)	PROPOSED EXPANSION (B)	AS PER REVISED PROPOSAL (A+B) CUMULATIVE	REMARKS
Objective of the Project	Shopping Mall cum Hotel Project	Shopping Mall cum Hotel Project	Shopping Mall cum Hotel Project	No Change
Facilities Proposed	135 Service apartments in hotel, Restaurant/food court with swimming pool & Shopping mall with first aid room	1 Service apartment, conference hall & increase the Shopping mall area	136 Service apartments in hotel, Restaurant/food court, conference hall with swimming pool & Shopping mall with first aid room	Increase the facilities
Total Plot Area	0.661 ha. (6,608 sq. m.)	No change	0.661 ha. (6,608 sq. m.)	No Change
Total Built-up Area	27,000 sq.m.	7,920.85 sq.m.	34,920.85 sq.m.	Increase in Built-up area
Total Cost of Project	Rs. 55 Crores	Rs. 40 Crores	Rs. 95 Crores	Increase in Project Cost
Total Population Expected	2,774 Persons	404 Persons	3,178 Persons	Increase in population
Total No. of Towers	1 tower	No change	1 tower	No change
Max. Height of the Building	37.50 m.	7.45 m.	44.95 m.	Increase in building height
Total Parking Proposed	292 Cars + 285 Two wheelers	59 Cars + 160 Two wheelers	351 Cars + 445 Two wheelers	Increase parking facility
Capacity of D.G. Sets	625 kVA x 3 nos.	500 kVA x 3 nos. + 500 kVA x 1 (as backup)	500 kVA x 3 nos. + 500 kVA x 1 (as backup)	Increase in D.G. sets capacity
Total Water Requirement	119.625 KL/day (which includes 70.11 KL fresh water req.)	--	110 KL/day (which includes 91 KL fresh water req.)	Decrease in water req. as per norms
Waste Water Generation	107.662 KL/day	---	88 KL/day	Decrease in waste water generation as per norms
Capacity of STP	130 KL	-	106 KL	Decrease in STP capacity as per norms
Total Municipal Solid Waste Generation	417.65 Kg/day	11.35 Kg/day	429 Kg/day	Increase in municipal solid waste generation as per norms

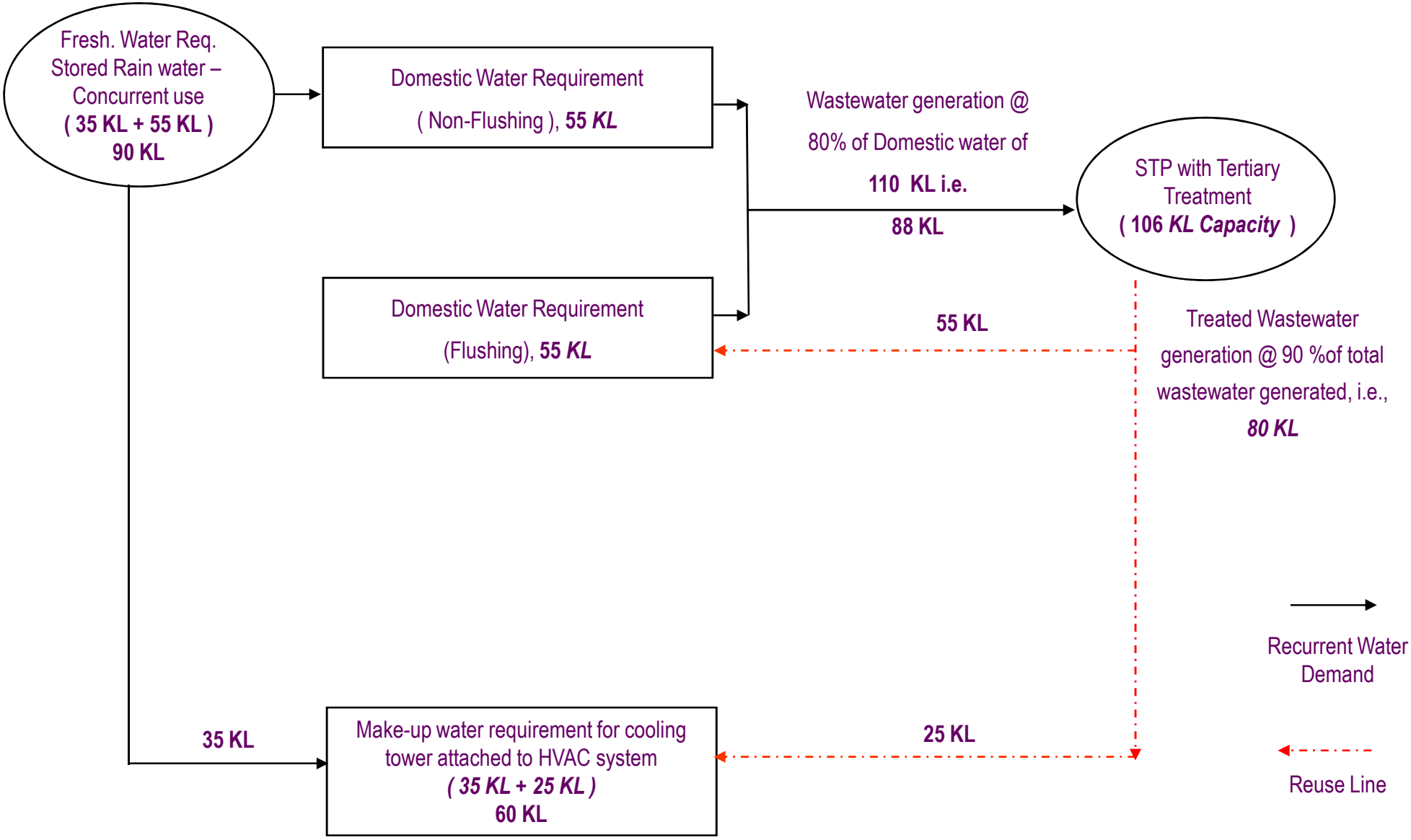
ACTIVITY WISE POPULATION & DAILY WATER CONSUMPTION DETAILS

ACTIVITY	CARPET AREA Sq.m. / SEATING CAPACITY / ROOMS	POPULATION	NON-FLUSHING REQ. (in KL)	FLUSHING REQ. (in KL)	TOTAL (in KL)
Retail Area (Visitors)	4,194.98	1,398 Persons (based @ 3 sq.m. / Person as per NBC for Gr. Floor & 1st floor)	1,398 x 5 Ltr. = 6.99	1,398 x 10 Ltr. = 13.98	20.97
Retail Area (Visitors)	5882.99	980 Persons (@ 6 sq.m. / Person for 2nd to above floors)	980 x 5 Ltr. = 4.90	980 x 10 Ltr. = 9.80	14.70
Retail Staff	--	238 Persons (10% of Retail visitor of 2,378)	238 x 15 Ltr. = 3.57	238 x 30 Ltr. = 7.14	10.71
Conference hall	35 Seats	35 Persons (1 person / seat)	35 x 5 Ltr. = 0.175	35 x 10 Ltr. = 0.35	0.525
Food Court	85 Seats	85 Persons (1 person / seat)	85 x 45 Ltr. = 3.825	85 x 25 Ltr. = 2.125	5.95
Restaurant	20 Seats	20 Persons (1 person / seat)	20 x 45 Ltr. = 0.90	20 x 25 Ltr. = 0.50	1.40
Staff (Restaurant / Food Court/ Conference hall)	--	14 Persons (10% of Restaurant / Food court / Conference hall)	14 x 15 Ltr. = 0.21	14 x 30 Ltr. = 0.42	0.63
Hotel	136 Rooms	272 Persons (2 person / Room)	272 x 120 Ltr. = 32.64	272 x 60 Ltr. = 16.32	48.96
Hotel Staff	--	136 Persons (1 Persons / Room)	136 x 15 Ltr. = 2.04	136 x 30 Ltr. = 4.08	6.12
	TOTAL	3,178 Persons (on full occupancy)	55.25 Say 55 KL	54.715 Say 55 KL	109.965 Say 110 KL

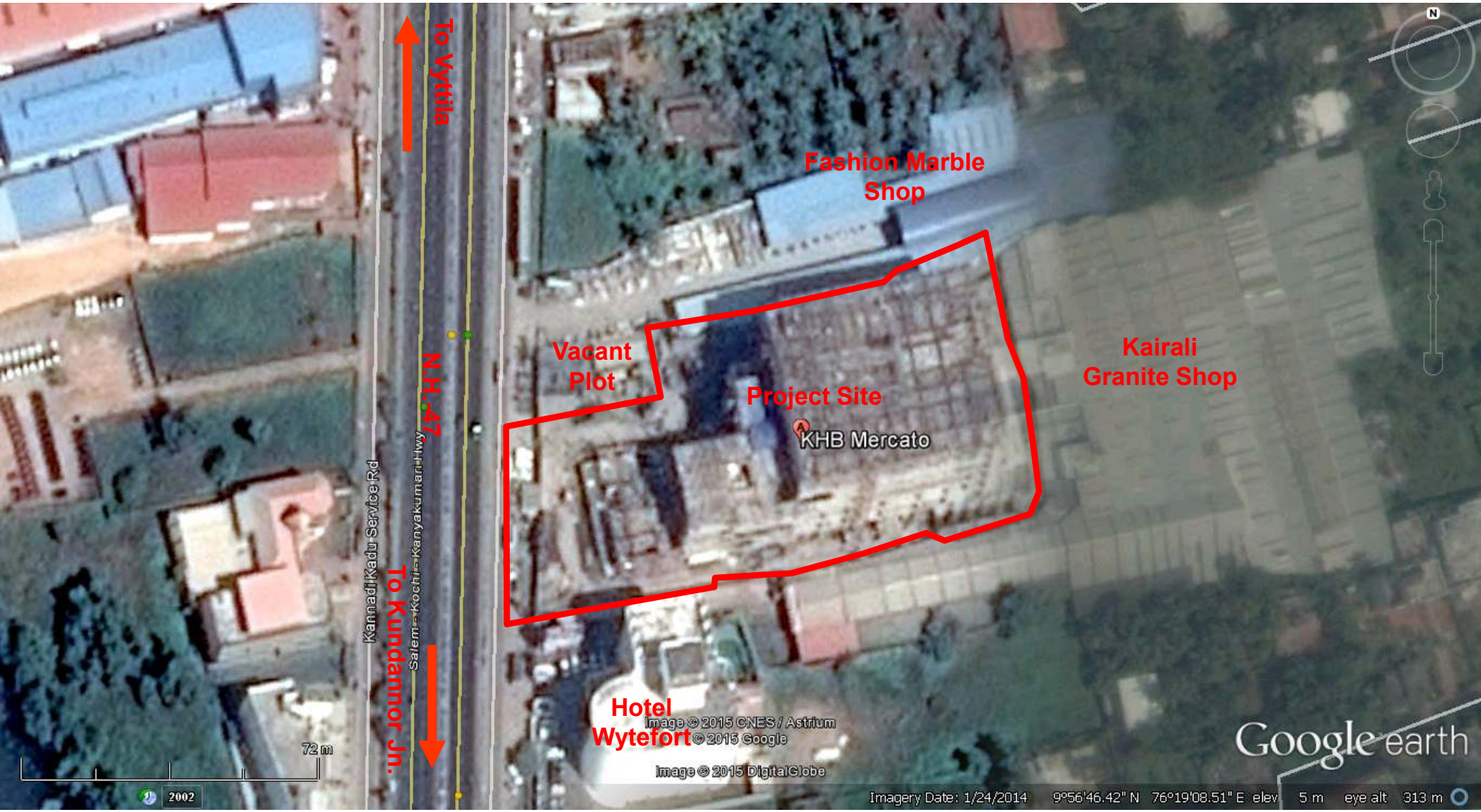
DAILY WATER CONSUMPTION BALANCE CHART
(NON-RAINY DAYS) (ZERO EXIT DISCHARGE)



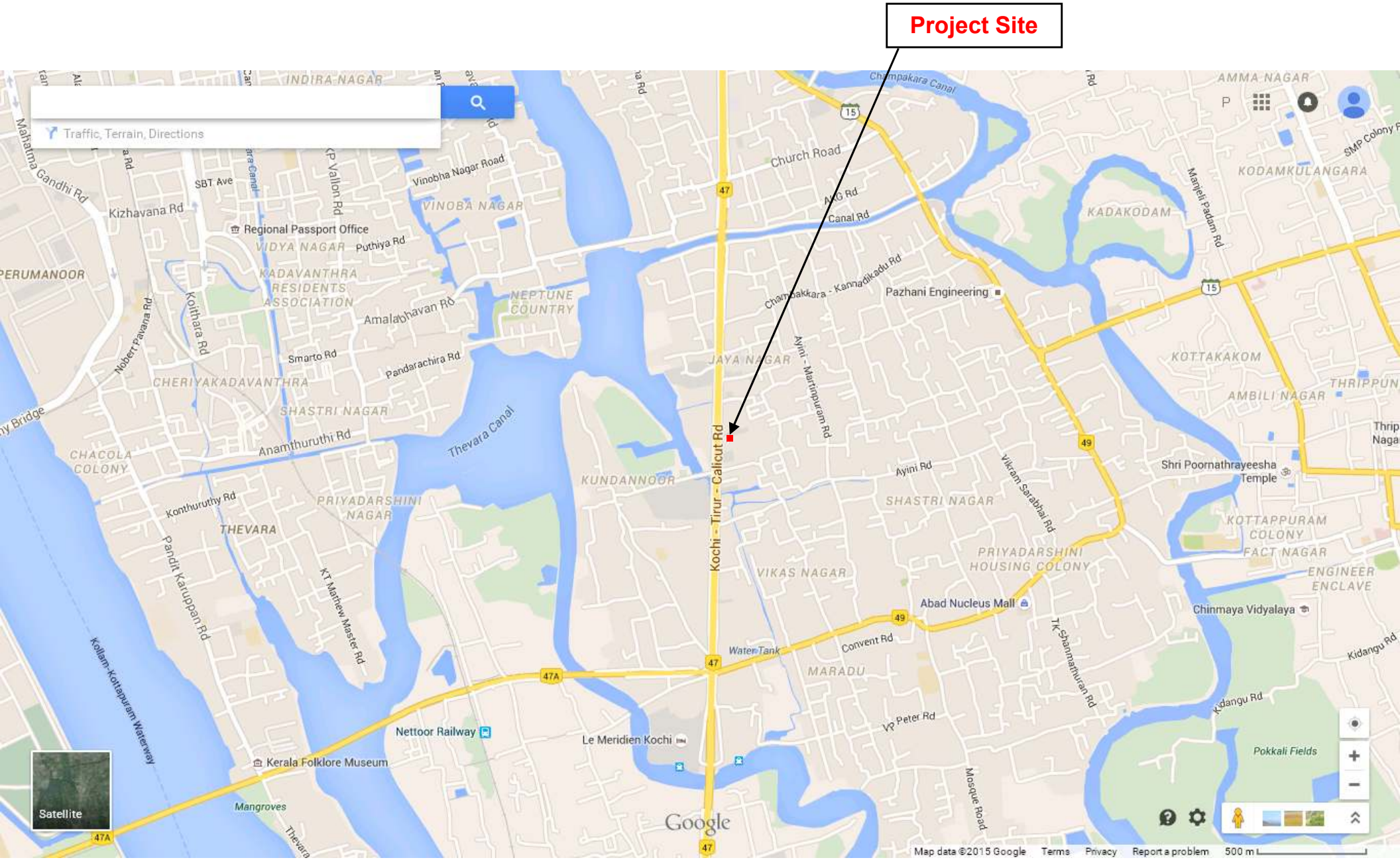
DAILY WATER CONSUMPTION BALANCE CHART
(RAINY DAYS) (ZERO EXIT DISCHARGE)



SATELLITE MAP OF THE SITE & SURROUNDINGS



VICINITY MAP OF THE SITE & SURROUNDINGS



SITE PHOTOGRAPHS - M/s KOOL HOME BUILDERS

West side elevation

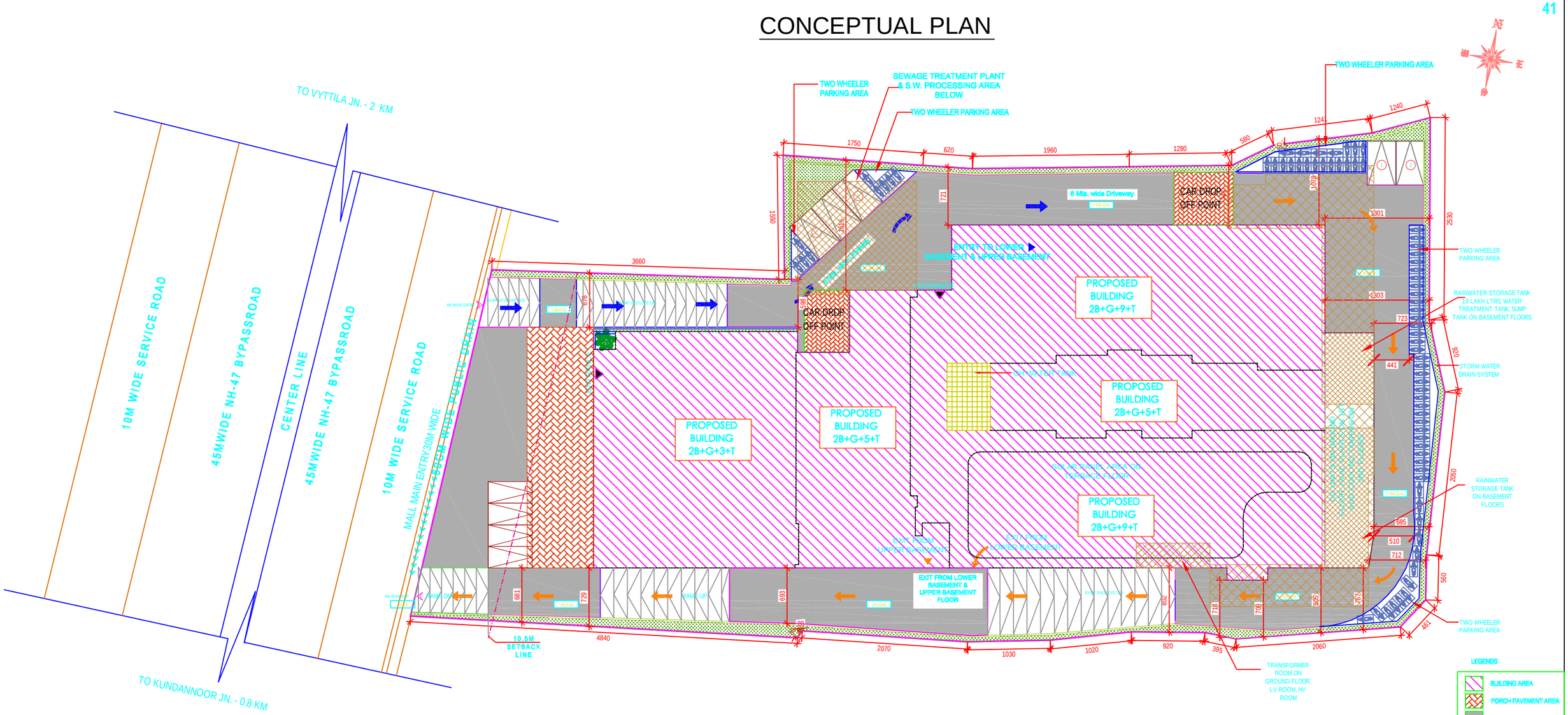
North Elevation

SITE PHOTOGRAPHS - M/s KOOL HOME BUILDERS

East Elevation

South Elevation

CONCEPTUAL PLAN



SCALE 1:500

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सत्यमेव जयते

Proceedings of the State Environment Impact Assessment Authority Kerala

Present: Dr. A.E. Muthunayagam, Chairman; Prof. (Dr.) K.P. Joy, Member; Sri. James Varghese IAS, Member Secretary

Sub: SEIAA Kerala - Construction of Shopping Mall cum Hotel Project at Maradu Desham, Maradu Village, Kanayannoor Taluk, Maradu Municipality, Ward No. 6, Ernakulam district, Kerala in Re-Survey No. 132/2, 132/3, 132/4, 132/13, 132/15 and 132/16, Resurvey Block No. 13, Thandapar No. 13662, by M/s Kool Home Builders – Environmental Clearance under EIA Notification 2006 accorded – Orders issued

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Environmental Clearance

No. 31/SEIAA/KL/3044/2012 *dated, Thiruvananthapuram 22-02-2013*

ORDER

The Managing Partner of M/s Kool Home Builders, vide their application received on 13-08-2012 has sought environmental clearance under the EIA Notification, 2006 for the construction of Shopping Mall cum Hotel Project at Maradu Desham, Maradu Village, Kanayannoor Taluk, Maradu Municipality, Ward No. 6, Ernakulam district, Kerala. The proposal has been appraised by the State Level Expert Appraisal Committee Kerala constituted by the competent authority, as per prescribed procedure in the lights of provisions under the EIA Notification 2006 and subsequent amendments, in its 7th meeting held on 1st September 2012 and 11th meeting held on 9th January 2013 AND on the basis of the supporting documents enclosed with the application viz., the Form – 1 & 1A, Conceptual Plan and the additional clarifications furnished in response to the observations, the SEAC Kerala recommended environmental clearance to the project.

It is interalia, noted that the project comes under the Category B, 8(a) of Schedule of EIA Notification 2006. It involves the construction of Shopping Mall cum Hotel Project at Maradu Desham, Maradu Village, Kanayannoor Taluk, Maradu Municipality, Ernakulam district, Kerala. The facilities proposed for the project are 135 service apartments in hotel, restaurant/food court (417 seats) with swimming pool and shopping mall with first aid room in basement, Lower Ground + Upper Ground + 8 floors + terrace floor in a single tower. The total built-up area is of 27,000 m^2. The total daily domestic water requirement for the proposed project is 119.625 KL/day. The waste water generated from the proposed project will be treated in a STP of capacity of about 130 KL/day. Solid waste of about 417.65 kg/day would be generated from the proposed project. Power requirement is 1200 kWh. Total cost of the project is ₹ 55 crores.

The SEIAA, after due consideration of the relevant documents and additional clarifications submitted by the project proponent, and in view of the recommendations of SEAC, approved for issuance of Environmental Clearance for the project mentioned above at its 14th meeting held on 22nd January 2013. Accordingly, the State Level Environment Impact Assessment Authority (SEIAA) Kerala constituted by Govt. of India vide Notification No. S.O. 2484(E) dt.3-11-2011 of Ministry of Environment and Forests, Govt. of India, published as Gazette extraordinary No. 2074 on 3-11-2011, hereby accord Environmental Clearance for the above project as per powers vested with it under the provisions of Environment Impact Assessment Notification – 2006 and its subsequent amendments, subject to strict compliance of the following specific conditions, and the general conditions contained in the Annexure, which shall also form a part of this document.

1. Adequate reinforcement shall be provided to prevent slumping of material and floor of clayey material to the adjacent plot during excavation.
2. The height of the building should be limited to the conditions specified by Southern Naval Command.
3. No treated water should be left outside from STP so that zero discharge is ensured.
4. The entire structure should be elevated by 2 m in order to avoid water logging at proposed car parking area suggested below ground level.
5. Use of reflective glasses for decorative purposes should not exceed 40% of the total area.

Compliance of the above conditions will be monitored by the Directorate of the Department of Environment and Climate Change, Government of Kerala or its agencies and also by the Regional Office of the Ministry of Environment and Forests, Government of India located at Bangalore. Necessary support for entry and inspection should be provided by the project proponent to the staff of the Directorate and Ministry for monitoring purposes.

The given address of correspondence of the Authorized Signatory of the project is:- Mr. P.M. Abdul Lahir, Managing Partner, M/s Kool Home Builders, Door No. 5/298 (1) of Aluva Municipality, Firekool Building, Thottakattukara P.O., Pin – 683108; Telephone No: 09744588073; E mail: lahirhasan@yahoo.com

Agency with NABET accreditation for EIA is:- M/s Environmental Engineers & Consultants Pvt. Ltd., A1 – 198, Janak Puri, New Delhi – 110058; Tel. No. 011-25507190; Telefax No: 011-25622604; E-mail: eecnewdelhi@yahoo.in & eecnewdelhi@gmail.com & eecindia@satyam.net.in; Mobile No. 9350873385, 9811080469

for James Varghese IAS
Member Secretary, SEIAA
and Principal Secretary to Government
Environment Department

To

Mr. P.M. Abdul Lahir
Managing Partner
M/s Kool Home Builders
Door No. 5/298 (1) of Aluva Municipality
Firekool Building, Thottakattukara P.O.
Pin – 683108.

Copy to :

1. The Principal Secretary, Environment Dept., Government of Kerala, Secretariat
2. The Director, Dept. of Environment and Climate Change, Govt. of Kerala, Tvm 24.
3. IA-Division, Monitoring Cell, MoEF, Paryavaran Bhavan, CGO Complex, Lodhi Road, New Delhi - 110003
4. MoEF Regional Office, Southern Zone, Kendriya Sadan, 4th Floor, E&F Wing, II Block Koramangala, Bangalore-560034
5. Chairman and Members of SEIAA Kerala
6. Chairman, SEAC Kerala
7. Website uploading
8. Stock file