सत्यमेव जयते

Proceedings of the State Environment Impact Assessment Authority Kerala

Present: Prof. (Dr.) K.P. Joy, Chairman, Dr. J. Subhashini, Member and Sri. V. S. Senthil, I.A.S., Member Secretary.

Sub: SEIAA-Environmental Clearance - Application for environmental clearance for the proposed Residential Apartment Project, M/s. Artecth Colors, Residential Apartment at Karyavattom, in Re Sy. Nos. 351/3-1, 351/3-2, 351/3-3, 351/3-4 or Sy.No. 3023/14-1, 14, 3023/14-1 at Uliyazhathura Village, Thiruvananthapuram Taluk, Thiruvananthapuram District, by Sri. Viju Varghese - E.C- Granted-Orders issued

STATE ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY

No. **827/SEIAA/EC1/2616/2015** *dated, Thiruvananthapuram 01-08-2016*

Read:- 1. Application No. nil, dated 11.06-2015 submitted by Sri.Viju Varghese, Deputy General Manager (MEP), Artech Relators Pvt. Ltd., Artech House, TC/24/2014(1), Thycadu, Thiruvananthapuram, Kerala – 695014.
2. Minutes of the 48th meeting of SEAC held on 6/7-09-2015.
3. Minutes of the 54th meeting of SEAC held on 6-7/4/2016.
4. Minutes of the 55th meeting of SEAC held on 10/11/20-05-2016.
5. Minutes of the 54thmeeting of SEIAA held on 21-06-2016.

ENVIRONMENTAL CLEARANCE NO.[illegible]/2016

Sri. Viju Varghese, Deputy General Manager (MEP), Artech Relators Pvt. Ltd., vide his application received on 08/07/2015 has sought environmental clearance under the EIA Notification, 2006 for the Residential Apartment project in Re Sy. Nos. 351/3-1, 351/3-3, 351/3-4, 351/3-2 or Sy.No.3023/14-1, 14, 3023/14-1 at Uliyazhathura Village, Thiruvananthapuram Taluk, Thiruvananthapuram District. The project comes under the Category 8 (B2) of Schedule of EIA Notification of MoEF dated 19/09/2006. No forest land is involved in the present project. Other details of the project are as follows:

BASIC INFORMATION ABOUT THE PROJECT

Name of the Project	Artech Colors, Residential Apartment at Karyavattom
Survey Numbers	Resurvey No. 351/3-1, 351/3-3, 351/3-4, 351/3-2
Village	Ulliyazhathura Village
Tehsil	Thiruvanathapuram Taluk
District	Thiruvanathapuram District
Extent of land in hectors	0.5784 Ha
Is the property forest land/Govt. land/ own land	Own Land
Latitude	8^0 34'25.9"
Longitude	76^0 53'44.8"
Extent of area (in hectares)	0.5784 Ha
Total plot area	5784.00m^2
Total Built-up area	27207.98 m^2
Height of the building	57m.
No. of floors	19
Expected cost of the project	49.10 Crores
Interlinked project (if any)	No
Whether CRZ is applicable	Not Applicable
Status of litigation/complaint/cases	Nil as declared
Permanent or temporary change on land use, land cover or topography	The Project site is open plot. Site will be developed as Residential apartments
Nearest water body	Akkulam lake at an aerial distance of 5.7 km
Proneness to natural hazards	The site is a stable land form with less than 1 m top soil followed by laterite followed by bed rock. Hence the site is not prone to landslide or subsidence. The site is not prone to flood. Storm water runoff will be controlled by intercepting the run off for roof top harvesting and for groundwater recharging and controlled release. This will reduce contribution of the development to offsite flooding. **Earthquake :** The structure of the building will be designed as per IS codes for Zone III.
Environmental parameters considered	
WATER	
Water (expected use and sources in KLD)	The total water requirement for the project during monsoon season is 139 kLD and during non-monsoon season is 145 kLD.
Sources of generation and facilities for liquid waste treatment	The source of water will be the existing wells and harvested rainwater.
Facilities for liquid waste treatment	For liquid waste treatment, a STP of capacity 125 kLD with MBBR technology is proposed
Water quality meeting requirements	The raw water available meets physical and chemical standards prescribed for by BIS 10500 for drinking water
Water Regime	The natural slope of the land is such that, the excess run off flows to the existing roadside drain.

LAND	
Access road to the site – Width & Condition	The access road to the site is 9.4 m wide. The existing road has the capacity to cater for the additional traffic due to the proposed project
Proximity to forest lands	There are no forests within 15 km radius of the site
Storage of explosives /hazardous substances	The only hazardous materials used during construction will be fuels and engine oils. Proper management of these materials will leave no significant impact on the environment.
Hazardous waste management	Waste oil generated from DG sets shall be stored at separate location duly marked and will be sold to the CPCB authorized recyclers.
Facility for solid waste management	• The total quantity of solid waste is expected at 610 kg/day. Out of which 185 kg/day will be non-biodegradable and 425 kg/day will be biodegradable. • The project proponents have proposed provision for segregation and collection of biodegradable & non-biodegradable waste within the premises. • Biodegradable waste will be treated in biogas plant and the non-biodegradable waste will be handed over to recyclers. Dried sludge from STP will be used as manure within the premises for plants. • Any e-waste generated during the operation phase of the project will be handed over to authorized e-waste collection centres.
Top soil, overburden etc.	≥15m.

		MANAGEMENT PLAN:
Envt Mgmt plan/ Eco restoration plan	**Air pollution**	**In Construction phase- For controlling air pollution :** • Water Sprinkling • Cover on trucks • Use of RMC instead of preparing concrete at site • Vehicles with valid PUC **DG sets:** CPCB approved low sulphur fuel. **For Operation phase-** • Adequate Parking provision; well organized traffic management plan for Smooth flow of vehicles. • Regular PUC check-up for vehicles. **DG sets:** As per CPCB norms, Proper Maintenance, Use of Low sulphur fuel. • Acoustic Enclosures for DG sets • Plantation of tress will reduce air pollution and also act as noise buffer.
	Water pollution	**For Construction phase-** • Provision of temporary toilets for labour. • Precaution to avoid water logging during construction • Rainwater recharge pits will capture the runoff. **For Operation phase-** • Use of water saving practices • Adoption of dual flush system • Rain water harvesting • Plantation of less water consuming trees. • STP is planned and treated sewage will be used for secondary requirements like flushing and gardening.
	Noise	**In Construction phase- For controlling noise pollution :** • Barricades along the periphery of the site. • Ear Plugs for Labourers

		• D.G. sets CPCB approved • No noisy work in night shifts. • Using electrically operated construction equipment. **For Operation phase-** • Adequate Parking provision; well organized traffic management plan for Smooth flow of vehicles. • Regular PUC check-up for vehicles. • DG sets: As per CPCB norms, Proper Maintenance, Use of Low sulphur fuel. • Acoustic Enclosures for DG sets • Plantation of tress will reduce air pollution and also act as noise buffer
	Solid Waste Management	**For Construction phase-** • Recycle of Debris in the project site. • Proper and Separate storage of construction material • Storage of all petroleum products on impervious layers viz. concrete. • Transportation, storage and handling, disposal of HW as per their guidelines and handing it over to authorized agencies. • Use of electrically operated machinery. • Segregation of waste at Source
	Eco restoration	**For Construction phase-** • Plantation of local tree species on the Periphery of site •Regulation of vehicular trips and speed and proper maintenance of machinery **For Operation phase-** • Plantation of local tree Species
NOISE		
Sources of noise pollution control measures	The activities such as Site Clearance, Excavation, Construction of Structures, Heavy vehicle traffic, Use of DG Set etc are the sources of noise pollution. The control measures include, • Barricades along the periphery of the site. • Ear Plugs for Labourers • D.G. sets CPCB approved • No work in night shifts. • Using electrically operated construction equipment.	
Noise level monitoring	Noise levels will be as per the rules as applicable	
AIR		
Likely emissions affecting environment by deposition of pollutants emitted to air into the land or into water	**Construction Phase** • Use of RMC will eliminate the handling of cement, sand and concrete thus dust emission will be minimized • Water sprinkling will be done at regular intervals to reduce control of dust generation **Fugitive dust control measures** • Water sprinkling of exposed areas and dust covers for trucks, will be provided to minimize any adverse impacts. • DG stack height shall be as per CPCB guidelines.	
Air quality monitoring	The ambient air quality as per NAAQ standards will be maintained	

<table>
<tr><td colspan="2">ENERGY</td></tr>
<tr><td>Energy requirement</td><td>The energy requirement during operation phase for the residential units is 1500 kVA and for the office space is 250 kVA.</td></tr>
<tr><td colspan="2">BIODIVERSITY</td></tr>
<tr><td>Presence of any endangered species or red listed category</td><td>No endangered species or red listed category species in or near the site</td></tr>
<tr><td>Loss of native species and genetic diversity</td><td>At present the site is a coconut plantation with end of life coconut trees and weedy bushes. There will not be any loss of native species or genetic diversity</td></tr>
<tr><td>Eco restoration programmes</td><td>For Construction phase
• Plantation of local tree species on the periphery of site
• Regulation of vehicular trips and speed and proper maintenance of machinery

For Operation phase-
• Plantation of local tree Species</td></tr>
<tr><td colspan="2">SOCIAL ASPECTS</td></tr>
<tr><td>Proximity to nearest densely populated or build-up area</td><td>The area is residential in nature</td></tr>
<tr><td>CSR related to the project</td><td>Summary of CSR Activities
<table>
<tr><th rowspan="2">Sl. No.</th><th rowspan="2">Particulars</th><th colspan="2">Amount in Rs.</th></tr>
<tr><th>Non-Recurring</th><th>Recurring</th></tr>
<tr><td>1</td><td>Health care</td><td>--</td><td>150,000</td></tr>
<tr><td>2</td><td>Education</td><td>270,000</td><td>150,000</td></tr>
<tr><td>3</td><td>PM's National Relief Fund</td><td>--</td><td>100,000</td></tr>
<tr><td>4</td><td>Environmental Sustainability</td><td>150,000</td><td>--</td></tr>
<tr><td colspan="2">Total</td><td>420,000/-</td><td>400,000/-</td></tr>
</table></td></tr>
<tr><td colspan="2">GENERAL</td></tr>
<tr><td>Details of Authorised Signatory & Address for correspondence)</td><td>Sri. Viju Varghese
Deputy General Manager (MEP), Artech Realtors Pvt. Ltd
Artech Realtors Pvt. Ltd
Artech House, TC/24/2014(1)
Thycaud, Thiruvananthapuram, 14, Kerala, India
Tel: 9388189889
Email: viju@artechrealtors.com</td></tr>
<tr><td>Details of NABET approved EIA consultant Organisation</td><td>Name of consultant organization: ULTRA-TECH Environmental Consultancy and Laboratory

NABET Certificate No: NABET/EIA/1417/RA010</td></tr>
</table>

3. The proposal was placed in the 48th meeting of SEAC held on 6/7-09- 2015. The proponent informed that the construction phase was expected to be around 3 years. The present land use is coconut cultivation in terraces. The proponent also informed that there is no building in the proposed area. Height of the proposed building is 57.0 m. The Committee deferred the item for Field Inspection and for production of following documents/details;

1. Revised site plan
2. A clear access road with 10m width
3. Instead of incinerator bio gas plant for solid waste management is to be provided.
4. Emergency evacuation plan
5. Details regarding the parking facility.
6. Details regarding the type of foundation and piling
7. Details of quantity of earth to be removed with profile sketch
8. Land use plan of the site

4. Field visit to the site was carried out on 22.01.2016 by a sub-committee of SEAC, comprising of Dr. George Chakkacherry, Sri. Ajayakumar and Sri. John Mathai. The site visit report is extracted below:-

"The Proponent and his representatives were present at the site at the time of site visit. The project site is located on the Gandhipuram-Pullannivila road about 2 km east of Kariyavattom. The width of the approach road is 9.5 m. The site is also approachable through a narrow road from Anandeswaram on the Sreekariyam-Pothencodu road. The land facing south, that is yet to be developed is currently under coconut plantation. Two bore wells and one open well are seen at the site. The overburden thickness exceed 15 m. The surrounding area supports moderate settlement. Multi storied structures are not seen in the vicinity.

Following points may be considered for recommending the project.

1. *Considering a level difference of 10 m, sectional view of the building including cross section of the proposed cutting should be provided.*
2. *The quantity of ordinary earth generated from the cut surface, quantity needed for refilling and quantity proposed to be taken out should be indicated.*
3. *There is a need to provide entry/exit either as stairs or as ramp to the front road from the podium, for easy evacuation in case of fire.*
4. *Yield test of the source wells should be carried out and result communicated.*

5. *Structural safety of placing a swimming pool at higher level of the building should be ensured.*
6. *Out of the total parking facility, the mandatory common parking facility to be made available should be indicated.*
7. *In the absence of a common storm water drainage facility by the side of the approach road, the scheme of channelising storm water from the plot is to be clarified.*
8. *There is a need to maximise rainwater harvesting and promote ground water recharge. This will enhance the water availability in the source wells. The mechanism/structures for this should be indicated with details.*
9. *Management of solid waste-biodegradable and other types need clarification.'*

5. On receipt of the inspection report and the additional details/ documents in compliance of the decision of the 48th meeting of SEAC, the proposal was considered by SEAC in its 54th meeting held on 06-07/04/2016. The Committee examined the additional documents/details of the project proposal. The Committee decided that the details submitted by the proponent shall be verified by the Sub Committee consisting of Shri. S. Ajayakumar, Shri. P. Sreekumaran Nair and Shri. John Mathai. Hence the proposal was again considered by SEAC in its 55th meeting held on 10/11/20-05-2016. The Committee observed in the meeting that the above subcommittee met on 06/05/2016 had analyzed the data supplemented and found that the revised plan of the project took in to consideration all the aspects raised in the earlier minutes.

6. In the submitted revised plan, one staircase is provided to the font road for emergency evacuation. Structural calculations for ensuring safety of the building are given earthwork quantity is provided, parking facilities are adequate, waste treatment facility are also adequately provided. Yield test of bore wells is also given. The Committee appraised the proposal based on Form I, Form I A, Pre-Feasibility Report, Mining Plan and Field Inspection Report. SEAC recommended the proposal for issuance of EC with the general conditions, for non-mining projects.

7. The proposal was considered in the 54th meeting of SEIAA held on 21st June 2016 and decided that green building conditions and post clearance inspection conditions may be included in the E.C. Revised C.S.R commitments to be obtained before issue of E.C. with the above specific condition and the usual general conditions for non-mining projects and the following green conditions:

Green conditions

1. Adequate rain water harvesting facilities shall be arranged for.
2. Technology and capacity of STP to be indicated with discharge point (if any) of the treated effluent.
3. Effluent water not conforming to specifications shall not be let out to water bodies.
4. Maximum reuse of grey water for toilet flushing and gardening and construction work shall be ensured.
5. Dual plumbing for flushing shall be done.
6. Provisions for disposal of e-wastes. Solid wastes, non-biodegradables and separate parking facilities for the building shall be provided.
7. Generation of solar energy to be mandatory for own use and /or to be provided to the grid.
8. There shall be no compromise on safety conditions and facilities to be provided by the project proponent, which shall be ensured for occupation, regularisation or consent to operate

8. The proponent has submitted the revised CSR proposal before SEIAA. Environmental clearance under the EIA notification 2006 is therefore granted to proposed Residential Apartment Project of Sri. Viju Varghese, Deputy General Manager (MEP), Artech Realtors Pvt Ltd, Artech House, TC/24/2014(1), Thycaud, Thiruvananthapuram-14, Kerala for M/s. Artecth Colors, Residential Apartment at Karyavattom, in Re Sy. Nos. 351/3-1, 351/3-2, 351/3-3 and 351/3-4 or Sy.No. 3023/14-1, 14 and 3023/14-1 at Uliyazhathura Village and Thiruvananthapuram Taluk, Thiruvananthapuram District subject to all the environmental impact mitigation and management measures undertaken by the project proponent in the documents submitted to SEIAA, and the mitigation measures proposed in the Appendix II, Form IA. The assurances and clarifications given by the proponent in the application and related documents will be deemed to be a part of these proceedings as if incorporated herein. Also the green conditions in para 7 above and general conditions for projects other than mining appended hereto will be applicable and have to be strictly adhered to. However if any genuine complaints about the quarry is received, E. C issued shall be reviewed.

9. Validity of this environmental clearance will be seven years from 01-08-2016, subject to earlier review in the event of non-compliance or violation of any of the conditions stipulated herein.

10. Compliance of the conditions herein will be monitored by the Authority or its agencies and also by the regional office of the Ministry of Environment & Forests, Government of India, Bangalore.

i) Necessary assistance for entry and inspection should be provided by the project proponent and those who are engaged or entrusted by him to the staff for inspection or monitoring

ii) Instances of violation if any shall be reported to the District Collector, Thiruvananthapuram to take legal action under the Environment (Protection) Act, 1986.

11. The given address for correspondence with the authorised signatory of the project is Sri. Viju Varghese, Deputy General Manager (MEP), Artech Realtors Pvt Ltd., Artech House, TC/24/2014(1), Thycaud, Thiruvananthapuram, 14.

Sd/-
V.S. SENTHIL, I.A.S.,
Member Secretary (SEIAA)
&
Addl. Chief Secretary
Environment & Forests Department
Government of Kerala.

To,

Sri. Viju Varghese,
Deputy General Manager (MEP),
Artech Realtors Pvt. Ltd.,
Artech House,
TC/24/2014(1),
Thycaud,
Thiruvananthapuram, 14.

Copy to,

1. MoEF Regional Office, Southern Zone, Kendriya Sadan, 4th Floor, E& F Wing, II block, Koramangala, Bangalore-560034.
2. Additional Chief Secretary to Government, Environment Department.
3. The District Collector, Thiruvananthapuram.
4. Principal Secretary, Industries Department.
5. Secretary, State Pollution Control Board, Pattom, Thiruvananthapuram-4
6. The Secretary, Uliyazhathura Grama Panchayat, Thiruvananthapuram-695587
7. Chairman, SEIAA
8. Chief Engineer, National Highways, Thiruvananthapuram- 33.
9. Website
10. Stock File
11. O/C.

Forwarded/ By order

Administrator

SEIAA

GENERAL CONDITIONS *(for projects other than mining)*

(i) Rain Water Harvesting capacity should be installed as per the prevailing provisions of KMBR / KPBR, unless otherwise specified elsewhere.

(ii) Environment Monitoring Cell as agreed under the affidavit filed by the proponent should be formed and made functional.

(iii) Suitable avenue trees should be planted along either side of the tarred road and open parking areas, if any, inclusive of approach road and internal roads.

(iv) The project shall incorporate devices for solar energy generation and utilization to the maximum possible extent with the possibility of contributing the same to the national grid in future.

(v) Safety measures should be implemented as per the Fire and Safety Regulations.

(vi) STP should be installed and made functional as per KSPCB guidelines including that for solid waste management.

(vii) The conditions specified in the Companies Act, 2013 should be observed for Corporate Social Responsibility.

(viii) The proponent should plant trees at least 5 times of the loss that has been occurred while clearing the land for the project.

(ix) Consent from Kerala State Pollution Control Board under Water and Air Act(s) should be obtained before initiating activity.

(x) All other statutory clearances should be obtained, as applicable, by project proponents from the respective competent authorities including that for blasting and storage of explosives.

(xi) In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Authority.

(xii) The Authority reserves the right to add additional safeguard measures subsequently, if found necessary, and to take action including revoking of the environment clearance under the provisions of the Environment (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.

(xiii) The stipulations by Statutory Authorities under different Acts and Notifications should be complied with, including the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and control of Pollution) act 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.

(xiv) The environmental safeguards contained in the EIA Report should be implemented in letter and spirit.

(xv) Provision should be made for supply of kerosene or cooking gas and pressure cooker to the labourers during construction phase.

(xvi) Officials from the Regional of MOEF, Banglore who would be monitoring the implementation of environmental safeguards should be given full co-operation, facilities and documents/data by the project proponents during their inspection. A complete set of all the documents submitted to MoEF should be forwarded to the CCF, Regional Office of MOEF, Bangalore.

(xvii) These stipulations would be enforces among others under the provisions of Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and Control Pollution) at 1981, the Environment (Protection) Act, 1986, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.

(xviii) Environmental Clearance is subject to final order of the Hon'ble Supreme Court of India in the matter of Goa Foundation Vs. Union of India in Writ Petition (Civil) No.460 of 2004 as may be applicable to this project.

(xix) Any appeal against this Environmental Clearance shall lie with the National Environment Appellate Authority, if preferred, within a period of 30 days as prescribed under section 11 of the National Environment Appellate Act, 1997.

(xx) The project proponent should advertise in at least two local newspapers widely circulated in the region, one of which (both the advertisement and the newspaper) shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letters are available with the Department of Environment and Climate Change, Govt. of Kerala and may also be seen on the website of the Authority at www.seiaakerala.org. The advertisement should be made within 10 days from the date of receipt of the Clearance letter and a copy of the same signed in all pages should be forwarded to the office of this Authority as confirmation.

(xxi) A copy of the clearance letter shall be sent by the proponent to concerned GramaPanchayat/ District Panchayat/ Municipality/Corporation/Urban Local Body and also to the Local NGO, if any, from whom suggestions / representations, if any, were received while processing the proposal. The Environmental Clearance shall also be put on the website of the company by the proponent.

(xxii) The proponent shall submit half yearly reports on the status of compliance of the stipulated EC conditions including results of monitored data **(both in hard copies as well as by e-mail)** and upload the status of compliance of the stipulated EC conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the respective Regional Office of MoEF, Govt. of India and also to the Directorate of Environment and Climate Change, Govt. of Kerala.

(xxiii) The details of Environmental Clearance should be prominently displayed in a metallic board of 3 ft x 3 ft with green background and yellow letters of Times New Roman font of size of not less than 40.

(xxiv) The proponent should provide notarized affidavit *(indicating the number and date of Environmental Clearance proceedings)* that all the conditions stipulated in the EC shall be scrupulously followed.

SPECIFIC CONDITIONS

I. Construction Phase

i. "Consent for Establishment" shall be obtained from Kerala State Pollution Control Board under Air and Water Act and a copy shall be submitted to the Ministry before start of any construction work at the site.

ii. All required sanitary and hygienic measures should be in place before starting construction activities and to be maintained throughout the construction phase.

iii. A First Aid Room will be provided in the project both during construction and operation of the project.

iv. Adequate drinking water and sanitary facilities should be provided for construction workers at the site, Provision should be made for mobile toilets. The safe disposal of wastewater and solid wastes generated during the construction phase should be ensured.

v. All the topsoil excavated during construction activities should be stored for use in horticulture/landscape development within the project site.

vi. Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority.

vii. Soil and ground water samples will be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants.

viii. Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such material must be secured so that they should not leach into the ground water.

ix. Any hazardous waste generated during construction phase, should be disposed off as per applicable rules and norms with necessary approval of the Kerala State Pollution Control Board.

x. The diesel generator sets to be during construction phase should be low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards.

xi. The diesel required for operating DG sets shall be stored in underground tanks and if required, clearance from Chief Controller of Explosives shall be taken.

xii. Vehicles hired for bringing construction material to the site should be in good condition and should have a pollution check certificate and should conform to the applicable air and noise emission standards and should be operated only during non-peak hours.

xiii. Ambient noise levels should conform to residential standards both during day and night. Incremental pollution loads on the ambient air and noise quality should be closely monitored during construction phase. Adequate measures should be made to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/KSPCB.

xiv. Fly ash should be used as building material in construction as per the provisions of Fly Ash Notification of September, 1999 and amended as on 27th August 2003. (The above condition is applicable Power Stations).

xv. Ready mixed concrete must be used in building construction.

xvi. Storm water control and its re-use per CGWB and BIS standards for various applications.

xvii. Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.

xviii. Permission to draw ground shall be obtained from the Computer Authority prior to construction/operation of the project.

xix. Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.

xx. Fixtures for showers, toilet flushing and drinking should be of low flow either by use of aerators or pressure reducing devices or sensor based control.

xxi. Use of glass may be reduced by upto 40% to reduce the electricity consumption and load on airconditioning. If necessary, use high quality double glass with special reflective coating in windows.

xxii. Roof should meet prespective requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfil requirement.

xxiii. Opaque wall should meet perspective requirement as per energy Conservation Building Code which is proposed to be mandatory for all airconditioned spaces while it is aspirational for non-airconditioned spaces by use of appropriate thermal insulation material to fulfil requirement.

xxiv. The approval of the competent authority shall be obtained for structural safety of the buildings due to earthquake, adequacy of fire fighting equipments, etc. as per National, Building Code including protection measures from lightening etc.

xxv. Regular supervision of the above and other measures for monitoring should be in place all through the construction phase, so as to avoid disturbance to the surroundings.

xxvi. Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the protect proponent if it was found that construction of the project has been started without obtaining environmental clearance.

II. **Operation Phase**

i. The installation of the Sewage Treatment Plant (STP) should be certified by an independent expert and a report in this regard should be submitted to the Ministry before the project is commissioned for operation. Treated affluent emanating from STP shall be recycled / reused to the maximum extent possible. Treatment of 100% grey water by decentralised treatment should be done. Discharge of unused treated affluent shall conform to the norms and standards of the Kerala State Pollution Control Board. Necessary measures should be made to mitigate the odour problem from STP.

ii. The solid waste generated should be properly collected and segregated. Wet garbage should be composted and dry/inert solid waste should be disposed off to the approved sites for land filling after recovering recyclable material.

iii. Diesel power generating sets proposed as source of back up power for elevators and common area illumination during operation phase should be of enclosed type and conform to rules made under the Environment (Protection) Act, 1986. The height of stack of DG sets should be equal to the height needed for the combined capacity of all proposed DG sets. Use low sulphur diesel. The location of the DG sets may be decided with in consultation with Kerala State pollution Control Board.

iv. Noise should be controlled to ensure that it does not exceed the prescribed standards. During night time the noise levels measured at the boundary of the building shall be restricted to the permissible levels to comply with the prevalent regulations.

v. The green belt of the adequate width and density preferably with local species along the periphery of the plot shall be raised so as to provide protection against particulates and noise.

vi. Weep holes in the compound walls shall be provided to ensure natural drainage of rain water in the catchment area during the monsoon period.

vii. Rain water harvesting for roof run-off and surface run-off, as plan submitted should be implemented. Before recharging the surface run off, pre-treatment must be done to remove suspended matter, oil and grease. The borewell for rainwater recharging should be kept at least 5 mts. Above the highest ground water table.

viii. The ground water level and its quality should be monitored regularly in consultation with Central Ground Water Authority.

ix. Traffic congestion near the entry and exit points from the roads adjoining the purposed project site must be avoided. Parking should be fully internalized and no public space should be utilized.

x. A Report on the energy conservation measures confirming to energy conservation norms finalise by Bureau of Energy Efficiency should be prepared incorporating details about building materials & technology, R & U Factors etc and submit to the Ministry in three months time.

xi. Energy conservation measures like installation of CFLs/TFLs for the lighting the areas outside the building should be integral part of the project design and should be in place before project commissioning. Use CFLs and TFLs should be properly collected and disposed off/sent for recycling as per the prevailing guidelines/rules of the regulatory authority to avoid mercury contamination. Use of solar panels may be done to the extent possible.

xii. Adequate measures should be taken to prevent odour problem from solid waste processing plant and STP.

xiii. The building should have adequate distance between them to allow movement of fresh air and passage of natural light, air and ventilation.

III Post Operational Phase

Environmental Monitoring Committee with defined functions and responsibility should foresee post operational environmental problems e.g. development of slums near the site, increase in traffic congestion, power failure, increase in noise level, natural calamities, and increase in suspended particulate matter etc. solve the problem immediately with mitigation measures

For Member Secretary, SEIAA

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