



Validity expires on 15/02/2024

Proceedings of the State Environment Impact Assessment Authority Kerala

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

Sub: Environmental clearance for proposed Hospital Project at Survey Nos.534/10, 534/10-2, 534/12, Thiruvananthapuram Village to be developed by Fr.Reji.K.J., Managing Director, M/s Dr.K.M.Cherian Institute of Medical Sciences Pvt.Ltd - Environmental Clearance- Granted

State Environment Impact Assessment Authority, Kerala

No.1008/EC4/5102/2015/SEIAA

Dated, Thiruvananthapuram 16/02/2017

- Ref:
1. Application dated 09/12/2015 from M/s.Dr.K.M.Cherian Institute of Medical Sciences Pvt.Ltd, Thazhathetil No.11, Kallissery. P.O, Chengannur, Alappuzha, Kerala- 689 124.
 2. Minutes of the 55th meeting of SEAC held on 10/11/20-05/2016
 3. Minutes of the 59th meeting of SEAC held on 11/12-07/2016
 4. Minutes of the 60th meeting of SEAC held on 28/29-07/2016
 5. Minutes of the 61st meeting of SEAC held on 11/08/2016
 6. Minutes of the 62nd meeting of SEAC held on 06/07-09/2016
 7. Minutes of the 60th meeting of SEIAA held on 27/10/2016

Environmental Clearance No. 17/2017

Fr.Reji.K.J, Managing Director, M/s Dr. K.M. Cherian Institute of Medical Sciences Pvt. Ltd., Chengannur, Alappuzha vide his application received on 09.12.15 and has sought Environmental Clearance under the EIA Notification, 2006 for the Residential cum Commercial project in Sy. Nos. 534/10, 534/10-2, 534/12 at Thiruvananthapuram Panchayat Chengannur Taluk, Alappuzha District, Kerala. It is interalia, noted that the project comes under the category B, 8(a) of Schedule of EIA Notification 2006.

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| File No. | 1008 / SEIAA / EC3 / 5102 / 2015 | | |
| Name of project | Environmental Clearance for the proposed hospital project to be developed by M/s Dr. K.M. Cherian Institute of Medical Sciences Pvt. Ltd. | | |
| Brief description of the project | Proposed 300 bedded hospital project with total plot area 1.2276 ha. (12,276 sq. m.) and total built-up area 29,254.19 sq. m. | | |
| Category/Subcategory & Schedule | Category 'B', Schedule 8 (a) | | |
| Location Sy no/ district, Taluk/ village etc. | Survey Nos. 534/10, 534/10-2, 534/12, Thiruvannandoor Village & Panchayat, Chenganoor Taluk, Alappuzha District, Kerala. | | |
| GPS co-ordinates | Latitude (N) | 09°20'00.30" to 09°19'57.90" | |
| | Longitude (E) | 76°35'39.90" to 76°35'34.60" | |
| for Mining projects | Extent of area (in hectares) | Not applicable | |
| | Minimum and maximum height of excavation (MSL) | Not applicable | |
| | Life of mine proposed | Not applicable | |
| | Ultimate depth of mining (in MSL) | Not applicable | |
| | Distance from the adjacent quarry | Not applicable | |
| | Capacity of production | Not applicable | |
| | Details of project cost | Not applicable | |
| | Financial statement including funding source and details of insurance | Not applicable | |
| for Construction projects | Built up area (in m ²) | 29,254.19 sq.m | |
| | No. of floors | Basement + Ground + 9 floors | |
| | Maximum height from ground level | 35.25 m. | |
| | Facilities proposed | 300 Bedded hospital with supporting infrastructure facilities | |
| | Details of project cost | About Rs. 123.06 Crores | |
| | Financial statement including funding source and details of insurance | Source :- Own source & bank loan Insurance :- Insurance to the workers and machinery during construction phase. | |
| | Activity schedule of the project | About 36 months | |
| CRZ recommendations | Not applicable | | |
| Forest clearances | Not applicable | | |
| Does it attract violation proceedings | Not applicable | | |
| EnvtMgmt plan/ Eco restoration plan (brief details) | MANAGEMENT PLAN: | | |
| | Air pollution | Provision will be made for D.G. sets with noise control measures and stack for flue gas. | |
| | Water pollution | Provision of STP/ETP for treatment of sewage/effluent and it's fully recycling for meeting the water requirement for flushing , horticulture , boiler & make-up water requirement | |

| | | |
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| | | for cooling towers attached with HVAC system |
| | Noise | Provision will be made for D.G. sets with noise control measures. |
| | Solid Waste Management | Provision of bio-gas generation plant within the project site for disposal of the bio-degradable solid waste. |
| | Eco restoration | As part of the eco restoration, large number of saplings of native species would be planted. |
| ABOUT THE PROJECT | | |
| Environmental parameters considered | Description | |
| WATER | | |
| Water requirement & sources | The total domestic water requirement of about 219 KLD (which includes daily fresh water requirement of about 170 KL). Treated water from STP/ETP to be used for flushing of toilets about (69 KLD), Horticulture requirement (5 KLD), Boiler requirement (15 KLD) & make-up water requirement for cooling towers attached with HVAC system (85 KLD). Source :- Stored Rain water (Tanks), Open Well, KWA water supply and treated water from STP. | |
| RWH units proposed | Yes, The project has provision for rain water storage tanks which will be used as source of water during rainy days & non-rainy days. | |
| Facilities for liquid waste treatment | Yes, Sewage Treatment Plant for domestic sewage & Effluent Treatment Plant for hospital / laundry waste water. | |
| Impoundment, damming, culverting, realignment or other changes to the hydrology of watercourses or aquifers? | No | |
| Water quality meeting requirements | Water quality meets requirements after the treatment of water (filtration & disinfection). | |
| Does it have provisions for use of recycled water | Yes, Treated water from STP to be used for flushing, horticulture , boiler & make-up water requirement for cooling towers attached with HVAC system | |
| LAND | | |
| Proximity to forest lands | None within the study area | |
| Access road to the site – Width & Condition | About 10 m. wide Kallisery-Kuthiyathodu Road, NW side | |
| Storage of explosives /hazardous substances | Yes, all precautionary measures in the storage & handling of HSD & PNG waste will be followed. | |
| Facility for solid waste mgmt | <ul style="list-style-type: none">➤ Collection & segregation within the site (bio-degradable waste (green bins) & non-biodegradable waste (blue bins).➤ The recyclable waste like packaging material, paper etc. would be sold through vendors.➤ Bio-degradable waste would be disposed through the bio-gas generation plant. | |
| Topographic features/ slope | There are some of native species of trees and different varieties of shrubs, herbs, grass & climbers at site. The slope of the site is towards east side. | |
| Proneness of the area for | No | |

| landslides | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|--|--|---------|-------------|-------------|--|--|--|--|----------|--|--|--|--|----------------------------|--|--|---------|-------------|---------------------|----|---|-----------|----|---|-----------|
| Significant land disturbance resulting in erosion, subsidence & instability | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Top soil, overburden etc. | Excavation of earthwork will be carried out at site. The top soil which is fertile will be kept at site for landscaping work, back filling & internal road construction purposes. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| AIR | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Air quality meeting requirements | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Noise level meeting requirements | Yes | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Likely emissions affecting environment | Emissions from D.G. sets and from the vehicles only. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| ENERGY | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Energy requirement | 1,500 kVA | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Energy sources | KSEB & D. G. Sets (750 kVA x 3 nos. as back-up) | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Extent of usage of alternative energy resources | Solar water heating system for the hot water generation and solar power operated street lights. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| BIODIVERSITY | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Presence of any endangered species or red listed category | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Loss of native species and genetic diversity | Yes. There are some native tree species and different varieties of shrubs, herbs, grass, climbers existing at site. For the development of the proposed project, some of the existing trees will be cut and remaining will, shrubs, herbs, grass & climbers will be cleared. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Likely displacement of fauna | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Any introduction of alien / invasive species | No | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| SOCIAL ASPECTS | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proximity to nearest habitation | The project site is within the Panchayat limits and several houses located within the 500 m. radius. | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| CSR related to the project/ allocation/ time frame (details mandatory) | <table border="1" style="width: 100%;"> <tr> <th colspan="3">Common CSR ACTIVITIES already carried out</th></tr> <tr> <th>Sl. No.</th><th>Particulars</th><th>Rs in lakhs</th></tr> <tr> <td></td><td></td><td></td></tr> <tr> <td></td><td style="text-align: center;">New unit</td><td></td></tr> <tr> <td></td><td></td><td></td></tr> <tr> <th colspan="3">Proposed common CSR Budget</th></tr> <tr> <th>Sl. No.</th><th>Particulars</th><th>Amount Rs. In lakhs</th></tr> <tr> <td>1.</td><td>Construction of toilets nearby Govt. school</td><td>About 0.5</td></tr> <tr> <td>2.</td><td>Health check up camps in collaboration with Rotary club</td><td>About 1.0</td></tr> </table> | Common CSR ACTIVITIES already carried out | | | Sl. No. | Particulars | Rs in lakhs | | | | | New unit | | | | | Proposed common CSR Budget | | | Sl. No. | Particulars | Amount Rs. In lakhs | 1. | Construction of toilets nearby Govt. school | About 0.5 | 2. | Health check up camps in collaboration with Rotary club | About 1.0 |
| Common CSR ACTIVITIES already carried out | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sl. No. | Particulars | Rs in lakhs | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | New unit | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Proposed common CSR Budget | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Sl. No. | Particulars | Amount Rs. In lakhs | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 1. | Construction of toilets nearby Govt. school | About 0.5 | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 2. | Health check up camps in collaboration with Rotary club | About 1.0 | | | | | | | | | | | | | | | | | | | | | | | | | | |

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| | 3. | Participating in the social forestry activities of the Panchayat | About 0.5 |
| The project proponent has earmarked an amount of Rs. 15 lakhs (non recurring) and Rs. 17 lakhs annually (Recurring) for implementing the activities under Corporate Social Responsibility. | | | |
| GENERAL | | | |
| Does it propose environment management plan | Yes | | |
| Does it have eco restoration programmes | Yes Provision for the green area development which includes native species such as medicinal trees, flowering trees, deciduous & evergreen trees, fruit trees, medicinal trees, shrubs & grass coverage. | | |
| Biomedical waste management | Yes, From the proposed hospital, bio-medical waste like infectious beddings, cotton, swabs, used syringes, discarded medicines, etc. would be generated. The bio-medical waste would be segregated at source by providing appropriate colour coded bins / containers as per the colour coding provided in the Bio-Medical Waste (Management & Handling) Rules. The Bio-medical waste from the proposed hospital would be outsourced through a Kerala State Pollution Control Board authorized agency (M/s Indian Medical Association Goes Eco Friendly, IMAGE). | | |
| E-waste management | Yes Discarded computer parts, monitor, key boards etc. constitutes E-waste and this waste will be stored in an earmarked area. E-waste will be disposed as per e Waste (Management & Handling) Rules, 2012. | | |
| Sufficiency of parking spaces/ traffic management | Yes, 354 Cars + 107 Two wheelers | | |
| Litigation/court cases, if any, against the project (provide details) | No | | |
| Right & nature of ownership of land | Private land | | |
| Is the property forest land/govt. land/own land | Own land | | |
| Details of Authorised Signatory | Fr. Reji K.J., Managing Director, M/s Dr. K.M. Cherian Institute of Medical Sciences Pvt. Ltd. | | |

2. The height of the proposed building is 35.25m and the total plot area of the proposed project is 12,276m² and the total built-up area is 29,254.19 m². The total power requirement is 1,500 KW which will be sourced through Kerala State Electricity Boards. Renewable energy devices used are solar water heater and solar photovoltaic cells. The total project cost is Rs.123.06 crores. The proponent has stated that there is no litigation pending against the project or land in which project is proposed to be set up.
3. The proposed project is registered with the Indian Green Building Council. *As per the OM No. 19-58/2011-1A.111 dated 27/06/2011 of MOEF notification, the proposal for*

EC in respect of building construction which have obtained Green building rating(pre-certification or provisional certification) under the rating programme of GRIHA,IGBC including LEED India etc by integrating high level of environmental norms in to their building plans, shall get priority for their consideration, out of turn, by the expert appraisal committee/State Level Expert Appraisal Committee, as the case may be. The proponent submitted the Indian Green Building Council certificate.

4. The proposal was considered in the 55th meeting of SEAC held on 10/11/20-05/2016. The Committee DEFERRED the item for field visit. It was decided that the sub-committee, among all aspects, may specially look into the aspects of storage of nuclear waste and disposal of other wastes.
5. The proposal was again considered in 59th SEAC meeting held on 11th&12th, July, 2016. But the committee deferred the item that the proponent was asked to submit the following additional documents and to inform the proponent regarding this
 1. The land falls in the flood plain of Pamba River with the river at a distance of 70 m. The high flood level is reported to be confined to the river banks. However, the main hospital block should be at least 100m distance from the river.
 2. The ground level of the block/ approach road level must be elevated at least by 1 m from the present level to avoid inundation in case of a flood like condition.
 3. Considering the general slope of the site towards north, Storm water management plan with connectivity to nearby drain should be provided. The storm water should not be directly discharged into the river.
 4. The basement floor planned for parking involves excavation. The excavation should be limited to 2 m considering the shallow water table condition. The excavated earth with a high content of sand must be used internally.
 5. RWH facility be enhanced to 600KL
 6. Mechanism for waste treatment and disposal was explained. But it should not entrain the river or the local shallow aquifer. Plan should be submitted.
 7. Maximise use of solar energy. The detailed plan with quantity to be given.
 8. Additional land has been acquired for parking and other ancillary facilities. The precise plan of parking facility with number of vehicles and traffic movement plan should be provided.The proponent submitted the clarification on 23/07/2016.
6. The proposal was considered in 60th SEAC meeting held on 28th & 29th, July, 2016. The Committee decided to **defer** the item to submit enhanced parking plan. The proponent submitted the clarification on 09.08.2016. The proposal was considered in the 61st SEAC meeting held on 11th August, 2016. The Committee after examining the Form I, Form IA, Conceptual plan, Field Inspection Report and the other documents and details provided by the proponent, decided to defer the item for verification of the clarifications submitted and further appraisal by a subcommittee consisting of Sri. S. Ajaya Kumar, Sri. P.Sreekumaran Nair and Sri. John Mathai.

7. The proposal was again considered in the 62nd SEAC meeting held on 6th & 7th September 2016. The Committee appraised the proposal based on the details provided by the applicant and decided to Recommend for issuance of Environmental Clearance subject to the general conditions and the specific condition that the parking facility should enhance as committed in the revised plan.
8. SEIAA in its 60th meeting held on 27th October 2016 decided to accept the recommendation of SEAC on the condition that all the general and specific conditions should be strictly implemented.
9. Therefore Environmental Clearance as per the EIA notification 2006 is hereby accorded for the proposed M/s Dr.K.M.Chcrian Institute of Medical Sciences Pvt.Ltd - Survey Nos.534/10, 534/10-2, 534/12, Thiruvannandoor Village Alappuzha District, Kerala subject to the clarifications, conditions mentioned in para 5 & 7 above. The clearance will be subject to all the environmental impact mitigation and management measures envisaged by the project proponent in the documents submitted to SEIAA, the mitigation measures specified against each in the table in para 1 above. The assurances in form 1A of the application (Appendix II) and clarifications given by the proponent will be deemed to be part of these proceedings as if incorporated herein. Also the general conditions for projects other than mining appended hereto and the following green guidelines will be applicable and have to be strictly adhered to.
- Technology and capacity of the STP to be indicated with discharge point (if any) of the treated effluent.
 - Effluent water not conforming to specifications shall not be let out to water bodies.
 - Maximum reuse of grey water for toilet flushing and gardening and construction work shall be ensured.
 - Dual plumbing for flushing shall be done.
 - Provisions for disposal of e-wastes, solid wastes, non-biodegradables and separate parking facility for the buildings shall be provided.
 - Generation of solar energy to be mandatory for own use and/or to be provided to the grid.
 - Mitigation measures to reduce carbon dioxide production as part of climate change action shall be adopted.
9. Validity of the Environmental Clearance will be seven years from 16/2/2017 subject to earlier review in the event of noncompliance or violation of any of the conditions stipulated herein.
10. Compliance of the conditions herein will be monitored by the Directorate of Environment and Climate Change or its agencies and also by the Regional Office of the Ministry of Environment and Forests, Govt. of India, Bangalore.
- i) Necessary assistance for entry and inspection by the concerned officials and staff should be provided by the project proponents.

- ii) Instances of violation if any shall be reported to the District Collector, Alappuzha to take legal action under the Environment (Protection) Act 1986.
- iii) The given address for correspondence with the authorized signatory of the project is, Fr. Reji.K.J., Managing Director, M/s Dr.K.M.Churian Institute of Medical Sciences Pvt.Ltd, Thazhathetil No.II, Kallissery.P.O., Chenganoor, Alappuzha, Kerala- 689 124.

Sd/-
V.S. SENTHIL, I.A.S.,
Member Secretary (SEIAA)

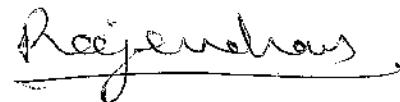
To,

Fr.Reji.K.J., Managing Director,
M/s.Dr. K.M.Churian Institute of Medical Sciences Pvt Ltd.,
Thazhathetil No.II, Kallissery.P.O.,
Chenganoor, Alappuzha, Kerala – 689 124.

Copy to

1. MoEF Regional Office, Southern Zone, KendriyaSadan, 4th Floor, E&F Wing, II Block, Koramangala, Bangalore-560034
2. Additional chief Secretary to Government, Environment Department,
3. The District Collector, Alappuzha
4. The District Town Planner, Alappuzha
5. Tahsildar, Chenganoor Taluk
6. Member Secretary, Kerala State Pollution Control Board, Pattom
7. The Secretary, Thiruvanyandoor Grama Panchayat, Chenganoor, Alappuzha
8. Chairman, SEIAA
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, Bangalore 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 prescriptive 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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