



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: Environmental Clearance -Application for environmental clearance for the Govt. Medical College in Survey Nos. 951/1, 1029/1A1A1A, 1029/1A1A1B & 1033/2A1 at Badiyadukka Village, Kasargod Taluk, Kasargod District- Application of Dr. PGR Pillai for M/s Govt. Medical College at Kasargod- E.C Granted-Orders Issued.

STATE ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY

No. 911/SEIAA/EC1/3597/2015

dated, Thiruvananthapuram 17-08-2016

- Read:-**
1. Application dated 25-05-2015 of Dr.P.G.R Pillai, Special Officer for New Medical Colleges, Old Physiology Block, Medical College, Gandhinagar, Kottayam - 686 008.
 2. Minutes of the 56th meeting of SEAC held on 06/07-06-2016.
 3. Minutes of the 55th meeting of SEIAA held on 16th July 2016.

ENVIRONMENTAL CLEARANCE NO. 120/2016

Dr.P.G.R Pillai, Special officer for new Medical Colleges, vide his application received on 08/09/2015 sought for environmental clearance under the EIA Notification, 2006 for the Residential Apartment project in Survey nos. 951/1, 1029/1A1A1A, 1A1A1B & 1033/2A1 at Badiyadukka Village, Kasargod Taluk, Kasargod District. The project comes under the Category B, 8(a) of Schedule of EIA Notification 2006. No forest land is involved in the present project. Other details of the project area as follows:

Name of the Project	Proposed Govt. Medical College at Kasargod
Survey Numbers	951/1, 1029/1A1A1A, 1029/1A1A1B, 1033/2A1
Village	Badiyadukka
Tehsil	Kasargod
District	Kasargod
Extent of land in hectares	25.0639 hectares
Is the property forest land/Govt. land/ own	Govt. Land

land	
Latitude	12.627496°
Longitude	75.091023°
Total Plot area	263045.7 sq. m
Total Built up area	70189.2 sq. m
Vacant area/open to sky	172621.8 sq. m
Maximum height from ground level	34.1 m
Extent of area (in hectares)	7.01892 hectares
Expected cost of the project	151.385 Crores
Interlinked project (if any)	No
Whether CRZ is applicable	No
Status of litigation/complaint/cases	Nil as declared
Permanent or temporary change on land use, land cover or topography	The proposed land is a barren hard laterite vacant land. The propose activity involves the construction of buildings and landscaping with trees , shrubs and garden plants which will improve the environmental quality of the existing absolutely barren open land
Topography of land and elevation	The proposed site is a barren lateritic outcrop without any vegetation and buildings.
Nearest water body	Pallathadka river which is a tributary of Sheriya river
Change in water bodies due to mining activities	NA
Proneness to natural hazards	Nil
Environmental parameters considered	
Water	
Water (expected use and sources in KLD)	Construction Phase Water demand : 32 KLD Source: From the bore well-constructed for the purpose and KEA
	Operation Phase Water demand: 755 KLD Source: Karla Water Authority A water supply scheme to the proposal is already submitted by the KWA for a capacity of 755 KLD. As per the report the water will be sourced mainly from an intake structure consist of well cum pump house having 6 M diameter and 13 M depth about 100m upstream of Pallathadka bridge in Pallathadka river which is a tributary of Sheriya river. .As this river is not perennial source of drinking water, to supplement the demand a RCC weir of length 45 M and 2.5 M height is proposed across the Pallathadka river about 75m up stream of existing Pallathadka bridge to facilitate the storage of raw water. In order to meet the water demand during acute summer months and to supplement the supply bore wells are also proposed. The ground water department had already identified 5 bore wells in the northern and southern sides of proposed site. In addition to these another local open well adjacent to Kalinga thodu is also proposed for supplement water supply. A well-managed rain water harvesting system

	with the capacity as per KMBR is also supplement the water supply during operation phase.
Sources of generation and facilities for liquid waste treatment	Liquid waste will be generated both during construction and operation phase During operational phase estimated amount of liquid waste generated will be 0.947 MLD.
Facilities for liquid waste treatment	During the construction phase the liquid waste generated will be treated in septic tank under contractors scope. During operational phase an STP of capacity 1 MLD is proposed to treat the liquid waste.
Water quality meeting requirements	IS 10500 drinking water standards will be met for the water used for the drinking and other contact use. The treated water will be used for the flushing and landscaping purposes
Water Regime	An open well to the north-west of the site (outside the site) with a depth of 8.00 m had about 1.5 m water column in the beginning of January. It dries up in summer. Another open well in the east-south east of the site, coinciding with a fracture zone direction has good quality potable water, being used by the adjacent school students.
Land	
Access road to the site –Width & Condition	The proposed area for Medical College is well connected with other locations of Kasaragod district. The proposed Medical College & Hospital campus is situated near to Badiyadukka - Perla road and the present location is well connected with all the major roads and highways. The proposed location is only at a distance of 7 Km from the Badiyadukka Township. The present location is very well connected by a 6 meter wide road and sufficient number of sub-roads with inter connections. In addition to the public road it is proposed to have its own internal roads with external linkages in all the directions inside the campus
Proximity to forest lands	Nil
Hazardous waste management	NA
Facility for solid waste management	<p>Facilities proposed for the solid waste management</p> <ul style="list-style-type: none"> • Incinerator - For incinerating combustible Municipal Solid waste except chlorinated plastics and for treating the biomedical waste as the biomedical waste management rule 2011 • Secured fill area- A lined sump for depositing incineration ash , domestic hazardous waste • Bio gas plant - For treatment of easily biodegradable Municipal solid waste • Recycling centre for Municipal solid waste - This centre will be for receiving the dry waste and for separation of recyclables. Recyclable fraction will be cleared once in a week by vendors on contract basis. • Autoclave - For treating the biomedical waste as per the Biomedical Waste Management Rule 2011

		<ul style="list-style-type: none"> Shredder - For treating the biomedical waste as per the Biomedical Waste Management Rule 2011
Top soil, overburden etc. (In detail)		Top soil gets compacted with the movement of vehicles, man and machineries during the construction phase. Top soil will be stripped out and preserved in heaps under cover which is to be restored back to the areas proposed for green belt and landscaping
Envt Mgmt plan/ Eco restoration plan	Management plan:	
	Air pollution	<u>Construction Phase</u> <ul style="list-style-type: none"> The site should be isolated by installing tall fabric fences to obstruct noise and dust. The excavators, loaders, vehicles and cranes should be operated only well within the fenced area of the project site. Pollution- under –check (PUC) should be made mandatory for all vehicles used for construction activities. Water should be sprinkled periodically on the access roads to suppress the dust generation during construction period. The tyres of the transport vehicles have to be washed before leaving the construction site. The material transport vehicles should be adequately covered The DG should be operated only on standby mode. Periodic emission test should be conducted. The stack height of the DG set has to be in conformance with the CPCB guidelines Air quality monitoring shall be conducted as per Environmental Monitoring Plan to detect air pollution <u>Operational phase</u> <ul style="list-style-type: none"> A strong vegetation belt which involve evergreen trees and pollution suppressing plants will be maintained in the plot DG sets comply with PCB norms of emissions will be used Incinerator will be located by considering both wind direction and altitude of the land so as to reduce air pollution rate Incinerators specifically designed for Hospital Waste will be used The flue gas of incinerator will properly treated (e.g. using water scrubbers) before release to the atmosphere.
	Water pollution	<u>Construction Phase</u> <ul style="list-style-type: none"> Check dams built near construction site in order to reduce quantity of erode soil particles reaching the nearby water bodies The material stored within the site will be carefully covered

		<ul style="list-style-type: none"> • The construction machineries and vehicles will be inspected periodically for the detection of leaks and spillages. • Water quality monitoring will be conducted as per Environmental Monitoring Plan to detect water pollution if any and to ensure standards of effluent. <p><u>Operational phase</u></p> <ul style="list-style-type: none"> • Proper rain water collection schemes will be adopted • The storm water from the site will be used for ground water recharging <p>The treated waste water will be reutilized</p>
	Noise	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> • Construction contract shall clearly specify the use of equipment emitting noise of not greater than 90 dB (A) for the eight hour operation shift, and the condition will be enforced. • Diesel generator to meet the noise standards set by Central Pollution Control Board will be used • Vehicles to meet the noise standards set by Central Pollution Control Board only will be allowed within the site • Noise quality monitoring will be conducted as per Environmental Monitoring Plan to detect noise pollution, and to ensure standards as applicable. <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> • DG sets will be provided with acoustics enclosure. • DG sets will be placed in acoustically treated room. • Noise regulation standard as per PCB norms will be set in the place
	Solid Waste Management	<p><u>Construction Phase</u></p> <ul style="list-style-type: none"> • The construction waste will be handled properly under the construction contractor • Provision of separate waste bins for collection of bio-degradable, non-degradable and domestic waste will be provided both in the construction site and construction. • Periodical maintenance of waste handling facilities should be undertaken. <p><u>Operation Phase</u></p> <ul style="list-style-type: none"> • The general waste and bio medical waste will be treated separately in accordance with the prevailing rules. • During the operational phase a STP of capacity 500 m³/day will be provided for liquid waste management. • An incinerator with sufficient capacity is proposed for solid waste treatment exclusively for biomedical waste disposal. • Biogas plant will be considered for the treatment of bio organic waste • Autoclave and shredder will be provided for the

		biomedical waste management
		<ul style="list-style-type: none">Also separate storage space for storing of recyclable waste will be provided. These stored recyclable waste will be sold to vendors
	Eco restoration	<ul style="list-style-type: none">No protected or endangered species are reported in the project areaCompensatory planation will be carried out.
Air		
Likely emissions affecting environment (In detail)	Construction Phase	
	Source	Control
	Operation of excavator, loader, vehicles and crane leads to air emissions due to fossil fuel burning	<ul style="list-style-type: none">Pollution- under –check (PUC) will be made mandatory for all vehicles used for construction activitiesRegular maintenance and inspection of the machineries will be conducted.The excavators, loaders, vehicles and cranes will be operated only within the fenced area of the project site
	Movement of transport vehicles leads to dust generation	<ul style="list-style-type: none">Water will be sprinkled periodically to suppress the dust generationThe tyres of the transport vehicles will be washed before leaving the construction site.The material transport vehicles will be adequately covered.
	Operation of DG set in construction site results in air emissions.	<ul style="list-style-type: none">The DG will be operated only on standby modePeriodic emission test will be conducted.The stack height of the DG set has to be in conformity with the CPCB guidelines.
	Operation Phase	
	Air quality deterioration can take place by open burning of the Hospital Wastes.	<ul style="list-style-type: none">Open burning of the Hospital Waste particularly if it contains plastics/polyethylene will be strictly banned since it produces dioxins in addition to other toxic gases
	Emission of pollutants from vehicular movements and DG sets and negligible emissions from sewage and solid waste handling and disposal	<ul style="list-style-type: none">A strong vegetation belt which involve will be maintained in the plotDG sets to comply with MoEF norms of emissionsOnly vehicles with pollution under control certificate will be allowed to ply
By deposition of pollutants emitted to air into the land or into water		Nil
Air quality monitoring	Air quality will be monitored both during construction and operation period as per the schedule presented in the EMP	
Energy		
Energy requirement	<ul style="list-style-type: none">Power during construction: 30 kW/day (KSEB);temporary connectionPower during operation: 4000 kW (including STP pumps load)Power backup mechanism :2 Numbers of 750kVA DG set and 5 Numbers of 60kVA UPS	

	<ul style="list-style-type: none"> • 200kW Grid interactive Solar system without battery is proposed <p>The energy consumption has been tried to be minimized by adopting following methods</p> <ul style="list-style-type: none"> • Energy-efficient light fixtures & BE 5 star rated equipments will be used. • At the places that have to be lightened 24 hours a day, high performance lamps are proposed. • Good insulation for the steam carrying pipes in the sterilization unit to avoid heat losses is proposed.
BIODIVERSITY	
Presence of any endangered species or red listed	<ul style="list-style-type: none"> • No protected or endangered species are reported in the project area. • There is no impoundment of any water bodies and hence no restriction in the water borne fauna .The site being total barren rock outcrop and vicinity area being scarcely vegetated and away from any forest area .There are no displacement of any terrestrial fauna is expected .
Loss of native species and genetic diversity	<ul style="list-style-type: none"> • The project execution involves clearing of vegetation cover of the project site. • Clearing of vegetation cover does not involve cutting and removal of trees.
Eco restoration programmes	<p>It is proposed to develop greenery in the proposed medical college campus, including aesthetically designed landscapes, lawns, gardens (lung-spaces) and medicinal plants.</p> <p>The green belts proposed also involve indigenous and acclimatized exotic species in consideration of its aesthetic appeal ecological services - dust/air pollution amelioration noise mitigation</p>
Social aspects	
Proximity to nearest densely populated or build-up area	<ul style="list-style-type: none"> • The site of the proposed Medical College situates comparatively away from residential area. • However around 20 numbers of houses situates by bordering the proposed site, who are farmers and daily wagers. • Migrations of population for seeking employment and the floating population, who depending the proposed project will affect the demography in positive sense.
CSR related to the project (In detail)	<ul style="list-style-type: none"> • In order to meet the daily needs of the people, there will emerge various kinds of business units to provide goods and services to the needy population. This will generate employment opportunities and may force people to migrate in this area .This lead to the special development.
General	
Details of Authorised Signatory & Address for correspondence)	<p>Dr.P.G.R Pillai, Special Officer for New Medical Colleges, Old physiology Block, Medical College, Gandhinagar, Kottayam. Pin- 686 008</p> <ul style="list-style-type: none"> • Email : drpgrpillai636@gmail.com • Phone number : 9447390864

<p>Details of NABET approved EIA consultant Organisation</p>	<p>Name of consultant: KITCO Ltd. Address for correspondences: KITCO Limited, Femith's, P B No 4407, Puthiya Road, NH Bypass, Vennala, Kochi -682028 Contact details: e mail- mail@kitco.in, ph:0484-4129000 NABET approval letter : Letter No: NABET/EIA/338/IA-017 dated 13th November 2013 and Letter No: NABET/EIA/SA/338 dated 23rd December 2015</p>
<p>3. The proposal was first considered in 56th meeting of SEAC held on 06/07-06-2016. The Committee appraised the proposal based on Form 1, Form I A and conceptual plan. The Committee recommended the proposal for issuance of EC with general conditions subject to the following specific conditions;</p> <ol style="list-style-type: none"> 1. Since water availability could be an issue during summer season a large lined reservoir with a water spread of 0.5 ha shall be formed for storing rain water. 2. Ground water shall be tested for pesticide residues. 3. Medical waste treatment/ disposal plant should be provided inside the campus itself. <p>4. The proposal was considered by SEIAA in its 55th meeting held on 16th July 2016. The Authority accepted the recommendation of SEAC and decided to issue E.C to the proposed Government Medical College at Kasargod in Survey Nos. 951/1, 1029/1A1A1A, 1029/1A1A1B & 1033/2A1 at Badiyadukka Village, Kasargod Taluk and Kasargod District, subject to the above specific conditions, the usual general conditions for non-mining projects and with an additional condition that,</p> <ol style="list-style-type: none"> 1) Bio Medical Wastes shall be disposed of as per the Bio-Medical Waste Management Rules, 2016 and other general conditions as applicable. <p>5. Validity shall be seven years from the date of issuance of E.C., subject to inspection by SEIAA on annual basis and compliance of the conditions, subject to earlier review of E.C in case of violation or non-compliance of any of the conditions stipulated herein. Environmental clearance as per the EIA notification- 2006 is therefore granted to the proposed Government Medical College and Hospital Complex at Kasargod in Survey Nos. 951/1, 1029/1A1A1A, 1029/1A 1A 1B & 1033/ 2 A1 at Badiyadukka Village, Kasargod Taluk, Kasargod District, subject to the specific conditions in para 3 above, additional condition stipulated by SEIAA in</p>	

para 4 above and the usual general conditions for non-mining projects appended hereto and the following green conditions to be adhered to, strictly.

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
6. The clearance issued will also be subject to full and effective implementation of all the undertakings given in the application form, all the environmental impact mitigation and management measures undertaken by the project proponent in the documents submitted to SEIAA, and the mitigation measures and waste management proposal as assured in the Form-1 and Form-1 A, Environment Management Plan as submitted; and the assurances and clarifications given by the proponent in the application and related documents will be deemed to be part of these proceedings as conditions as undertaken by the proponent, as if incorporated herein. Also the general conditions for projects other than mining appended hereto will be applicable and have to be strictly adhered to.
7. 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, at 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, Kasargod to take legal action under the Environment (Protection) Act, 1986.

8. The given address for correspondence with the authorised signatory of the project is Dr.P.G.R Pillai, Special Officer for new Medical Colleges, Old Physiology Block, Medical College, Gandhinagar, Kottayam - 686 008.

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

To,

Dr.P.G.R Pillai,
Special Officer for New Medical Colleges,
Old Physiology Block,
Medical College,
Gandhinagar,
Kottayam - 686 008.

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, Kasargod.
4. The District Town Planner, Kasargod
5. Tahsildar, Kasargod Taluk, Kasargod
6. Member Secretary, Kerala State Pollution Control Board, Pattom, Thiruvananthapuram-4
7. The Secretary, Badiyadukka Grama Panchayat, Kasargode-671124
8. Principal Secretary, Health and Family Welfare Department, Government of Kerala
9. Chairman, SEIAA
10. Website
11. E.C file
12. Stock File
13. O/C



Forwarded / By Order

G. Rajeev
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 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 project 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 effluent 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 effluent 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 conforming 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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