Validity expires on 28.11.2022

सत्यमेव जयते

Proceedings of the State Environment Impact Assessment Authority Kerala

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

Sub: SEIAA- Environmental Clearance for the proposed Common Biomedical Waste Treatment Facility (CBWTF) in Sy No. 205 at Puthenkurissu Village, Kunnathunadu Taluk, Ernakulam district by Dr. N K Pillai, Chief Executive Officer, M/s Kerala Enviro Infrastructure Limited - Granted-Orders issued

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STATE ENVIRONMENTAL IMPACT ASSESSMENT AUTHORITY, KERALA

No. 1036(A)/SEIAA/EC3/502/2016 ***dated, Thiruvananthapuram 29.11.2017***

Ref: 1. Application dated 02.03.2017 from Dr. N K Pillai, Chief Executive Officer, M/s Kerala Enviro Infrastructure Limited

2. Minutes of the 62nd meeting of SEAC held on 06th& 07th September, 2016.
3. Minutes of the 66th meeting of SEAC held on 19th December, 2016.
4. Minutes of the70th meeting of SEAC held on 04th & 05th April 2017.
5. Minutes of the 72nd Meeting of SEAC held on 08th& 09th May, 2017.
6. Minutes of the 77th Meeting of SEAC held on 07th August, 2017 .
7. Minutes of the 78th meeting SEAC held on 23rd August, 2017.
7. Minutes of the 74th meeting SEIAA held on 09.10.2017.
8. Affidavit received dated 11.11.2017 from Dr. N K Pillai., Chief Executive Officer, M/s Kerala Enviro Infrastructure Limited

ENVIRONMENTAL CLEARANCE NO. 87/2017

Dr. N K Pillai., Chief Executive Officer, M/s Kerala Enviro Infrastructure Limited., inside FACT-CD campus, Ambalamedu, Ernakulam, pin 682303, vide his application read as (1) above has sought Environmental Clearance under EIA Notification, 2006 for proposed Centralized Biomedical Waste Treatment Facility (CBMWTF) at Puthenkurissu village, Kunnathunadu taluk, Ernakulam district. Total built-up area of the project is 924 m^2. Around 14164 m^2 of industrial land owned by Govt. of Kerala and leased to KEIL for 50 years.Solid waste like incineration ash around 900 kg/day will be generated and disposed in the TSDF site owned by the proponent. Liquid waste generated will be treated in ETP and the treated water will be utilized for greenbelt development. The Bio-Medical Waste Treatment Facility

include 2 nos of incinerators (250- 300 kg/hr), 2 nos of autoclaves (250 litre) and a shredding unit (350kg/hr).

Details of the project as furnished by the applicant is as follows:

BASIC INFORMATION OF BUILDING PROJECT

	Project details	
	File No	1036(A)/SEIAA/EC3/502/2016
	Name /Title of the project	Common Biomedical Waste Treatment Facility (CBWTF), at Block No. 37, Survey No. 205 of Puthenkurissu Village, Kunnathunad Taluk, Ernakulam District, Kerala by M/s Kerala Enviro Infrastructure Ltd.
	Name and address of project proponent.	Kerala Enviro Infrastructure Ltd. (KEIL), TSDF Project, Inside FACT-CD campus, Ambalamedu, Kochi-682303, Kerala, *Ph. 0484 -272 2041, 2141, 2142.*
	Owner of the land	Land is owned by Govt. of Kerala and has been leased to KEIL for 50 years.
	Survey Nos. District/Taluk/and Village etc.	Block No. 37, Survey No. 205, Puthenkurissu, Taluk: Kunnathunad, Ernakulam,Kerala
	PROJECT DETAILS	
	Date of submission of Application	02-03-2016
	Total Built up Area	Total of built uparea of the facility is 924 m^2, including buildings for incineration plant, waste storage, DG &Electrical room, administration, store and security rooms.
	No of apartments	Not applicable as the project is for setting up of Common Biomedical Waste Treatment Facility (CBWTF).
	Height of the building	Not applicable
	Brief description of the project.	A Common Bio-medical Waste Treatment Facility (CBWTF) is proposed to be set up where bio-medical waste, generated from a number of healthcare units, will be suitably treated as per the prescribed procedure & norms laid down in the Bio-Medical Waste (Management and Handling) Rules, 2016 and latest applicable CPCB guidelines. Capacity of main treatment equipment/ facilities proposed as part of the Common Bio-medical Waste Treatment Facility by KEIL is as follows Proposed capacity of CBWTF :

Equipment	**Capacity**	**Number**

		Incinerator	250-300kg/hr	2
		Autoclave	250 ltrs	2
		Shredder	350 kg / hr	1
		Effluent Treatment Plant	50 m^3 / day	1
		The present proposal is to utilize 3.5 acres land,within the50 acre land of TSDF site, for setting up of Biomedical Waste Treatment Facility. The extent of land earmarked for the CBWTF will be kept apart from the remaining land of TSDF.		
	Is it a new Project or expansion/ modification of an existing project?	The proposed CBWTF is a new Project		
	Details of the Project Cost	**Particulars**		**Rs** (in lakhs)
		Project Cost Estimate		500
		Funding		
		Share contribution from Developer / Group Companies		75
		Equity from KSIDC		25
		MOEF Grant		100
		Govt. of Kerala Grant		100
		Term loan from KSIDC		200
		Total		**500**
	If CRZ recommendation applicable?	No		
	Distance from nearby habitation	600metre from residential area at Irumpanam,		
	Distance from nearby forest, if applicable	There are no forests within 10-km radius study area.		
	Distance from protected area,	There are no protected area, Wildlife Sanctuary, National Park etc within 10-km radius of study area.		

	Wildlife Sanctuary, National Park etc.		
	Distance from nearby streams/rivers/National Highway Roads and Airport	Nearest main public road (aerial)	Seaport –Airport road at 1.1 km
		Nearest railway station (aerial)	Tripunithura - 3.5 km
		Nearest water body	Chitrapuzha backwater - 370 m Ambalamedu lake - 1600 m
	Is ESA applicable? If so distance from ESA limit)	Not applicable	
	IMPACT ON WATER		
	Details of water requirement per day in KLD	Water requirement during construction phase of the CBWTF is approximately 20 kilo litre per day (KLD and during operation phase is 50KLD.	
	Water source/sources.	FACT Cochin Division, Ambalamedu, Ernakulam	
	Details of water requirements met from water harvesting.	RWH is proposed by collecting water from the building.	
	What are the impacts of the proposal on the ground water?	No significant impact on ground water resources is anticipated during operational phase of the project as there is no withdrawal of groundwater or effluent disposal on the land.	
	WASTE MANAGEMENT		
	Explain the facilities for Liquid waste Management	An Effluent Treatment Plant to treat 50 kilo litre per day (KLD) of waste water generated from the CBWTF is proposed as part of the CBWTF. Washing from laboratory and domestic wastewater will also be treated in ETP. Characteristic of the treated water is as follows: **Parameter Limit** • pH 6.5 -9.0 • Suspended solids less than 100 mg/l • Oil and grease less than 10 mg/l • BOD less than30 mg/l • COD less than 200 mg/l	

		Treated water will be recycled for use in scrubber and for floor washing gardening after disinfecting by chemical addition. Treated water used for gardening will undergo additional treatment like ultrafiltration to avoid potential contamination of surface water.The proposed facility is a zero discharge unit. No significant impact on ground water as well as surface water was identified during construction & operation phase. Separate drainage for storm water will be provided.
	Solid Waste Management	Incineration as hand ETP sludge generated in the CBWTF will be disposed in the secured landfill of TSDF of KEIL. Shredded plastic waste/needle& sharps shall be treated & disposed of in accordance with Biomedical Waste Management & Handling RulesMunicipal solid waste generated will be managed as per MSW (M&H) Rule, 2000 as amended thereof.
	E-Waste Management	E- waste generated will be recycled as per the E-waste Management Rule 2016.
	Facilities for Sewage Treatment Plant	Wastewater generated from toilets will be diverted to septic tank followed by soak pit and then to the ETP.
	How much of the water requirement can be met from the recycling of treated waste water? (Facilities for liquid waste treatment)	Approximately 40 KLD of the treated effluent will be recycled for use in the scrubber, for floor washing and gardening.
	What is the incremental pollution load from waste water generated from the proposed activities?	As waste water are treated in the Effluent Treatment Plant and recycled for use in scrubber and for washing and cleaning etc., no significant impact on ground water as well as surface water was identified during construction & operation phase.
	How is the storm water from within the site managed?	Separate drainage for storm water will be provided in the CBWTF to join with the marshy land owned by FACT and then release to Chitrapuza back water stream.
	Will the deployment of construction labourers	Unsanitary conditions around project site is not anticipated as the number of construction labourers

	particularly in the peak period lead to unsanitary conditions around the project site (Justify with proper explanation)	at a time is maximum 50.
	What on- site facilities are provided for the collection, treatment & safe disposal of sewage ? (Give details of the quantities of wastewater generation, treatment capacities with technology & facilities for recycling and disposal)	Domestic waste water generation is maximum 10 KLD. ETP has provision for treating domestic waste water. ETP will have primary chemical treatment for removal of suspended particles followed biological treatment for removal of BOD , COD and tertiary treatment like activated carbon filter to remove any remaining BOD, COD , colour and odour. The treated water will be recycled for use in scrubber, washing and cleaning and also for gardening.
	Give details of dual plumbing system if treated waste is used for flushing of toilets or any other use.	Treated water will be reused in the scrubber and for floor washing etc . Use of treated water for flushing of toilets is not envisaged at this stage.
	Energy Conservation	
	Details of power requirement and source of supply, backup source etc. What is the energy consumption assumed per square foot of built-up area ? How have you tried to minimize energy consumption?	**Power demand Construction phase: 100kW** **Power demand Operation phase: 200kW** Supply source -Kerala State Electricity Board (KSEB).
	What type of, and capacity of power back-up to you plan to provide?	Back- up power from proposed D.G. Set (250 kVA).
	What are the characteristics of the glass you plan to use? Provide specifications of its characteristics related to both short wave and long wave radiation?	Use of special glass in not considered as the project involves factory building.
	What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project	Not considered as the project involves factory building.
	Does the layout of streets & buildings maximize the	Solar energy utilization is proposed for street lighting(4 kW).

	potential for solar energy devices ? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details	
	Is the shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East and the West and the Roof ? How much energy saving has been effected?	Not considered as the project involves factory building.
	Do the structure use energy-efficient space conditioning , lighting and mechanical systems? Provide technical details. Provide details of transformers and motor efficiencies, lighting intensity and air-conditioning load assumptions ? Are you using CFC and HCFC free chillers? Provide specifications.	Not applicable as the project involves factory building
	What are the likely effects of the building activity in altering the micro-climates ? Provide a self assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?	Not applicable as the project involves factory building
	What are the thermal characteristics of the building envelope? (a) roof (b) external walls; and (c) fenestration? Give details of the materials used.	Not applicable as the project involves factory building
	What is the rate of non-conventional energy technologies utilized in the overall energy consumption?	Solar energy utilization is proposed for street lighting(4 kW)

	Provide details of the renewable energy technologies used.	
	Details of renewable energy (non – conventional) used.	Solar energy utilization is proposed for street lighting(4 kW)
	IMPACT ON AIR ENVIRONMENT	
	What are the mitigation measures on generation of dust, smoke, odours, fumes or hazardous gases	Water sprinkling will be done to keep dust under control during construction. Air pollution control devices (APCD) like High Pressure ventury scrubber and packed column are provided with incinerators to ensure that stack emissions are within the limits prescribed by MOEF & CC/CPCB . For proper dispersion of emissions like sulphur dioxide & oxides of nitrogen etc from the incinerator, stack height meeting MoEF & CC/CPCB guidelines will be provided(minimum 30 metres height). Regular maintenance of APCD will be ensured to maintain their effectiveness. Low Sulphur fuel like diesel will be used in the incinerator to reduce SO_2 emission. Use of combustion control and emission monitoring system. DG set will be used in emergency only. Air removed from the autoclave will we decontaminated by HEPA and activated carbon filter or any other method to prevent the release of pathogen. Fugitive emission due to shredding of treated waste for recycling will be controlled by containment. Odors from handling of waste materials hall be minimized by keeping biomedical waste in closed containers in confined area and its processing within specified time limit. Controlled emission of gaseous and particulate matter from the incineration facility is not expected to have any adverse impact and ambient air quality is expected to be within standard. Online pollutant monitoring shall be carried out as per the guideline given by CPCB and from Kerala State PCB. Green belt covering at 10 meter width around the

		periphery (4710 M^2) will be provided .
	Details of internal traffic management of the site.	Internal roads and parking area are provided for movement of waste collecting vehicle etc.
	Details of noise from traffic, machines and vibrator and mitigation measures	Equipment will be provided with noise control measures such as acoustic insulation.Plant and equipment will be designed to ensure that noise generated is limited to CPCB norms. Personnel Protective Equipment (PPE) like ear plugs/muffs is to be given to all the workers at site. Proper maintenance of the transport vehicles to maintain the low noise levels.
	Air quality monitoring in detail	Stack emissions will be monitored once in a quarter for parameters particulate matter, Oxides of nitrogen (NOx), Hydro Chloric acid (HCl), Hgand its Compounds.Dioxin and Furan in stack emissions will be monitored annually. Ambient air will be monitored once in a six monthfor parameters-Respirable Particulate Matter (PM_{10}),Fine particulate ($PM_{2.5}$), Sulphur dioxide (SO_2), Oxides of nitrogen (NOx).
	Will the proposal create shortage of parking space for vehicles? Furnish details of the present level of transport infrastructure and measures proposed for improvement including the traffic management at the entry & exit to the project site.	Parking area of 100 $M^2$for waste transporting vehicles will be provided. Also an area of 130 M^2 is provided for vehicle washing and disinfection.
	Provide details of the movement patterns with internal roads, bicycles tracks, Pedestrian pathways, footpaths etc., with areas under each category	As the project involves factory building, internal roads are provided for movement of waste collecting vehicle.
	Will there be significant increase in traffic noise & vibrations? Give details of the	Significant increase in traffic noise and vibration is not anticipated as the waste collected will be in the range of 15-16 Tonnes per day.

	sources and the measures proposed for mitigation of the above.	Noise generation from earth moving equipment and material handling traffic. Proper maintenance of the transport vehicles to maintain the low noise levels.
	What will be impact of DG sets & other equipment on noise levels & vibration in & ambient air quality around the project site? Provide details	• Plant and equipment will be designed to ensure that noise generated is limited to CPCB norms DG set will be provided with acoustics enclosure to meet statutory requirement for noise level. Equipment will be provided with noise control measures such as acoustic insulation, to ensure noise abatement. •Sufficient engineering control during installation of equipment. •Maintenance of vehicles is to be adopted to reduce noise levels; •Employees will be provided with ear protection devices.
	SOCIO- ECONOMIC ASPECTS	
	Will the proposal result in any change to the demographic structure of local population ? Provide the details.	No change in demographic structure of local population is anticipated due to the project, as the project is coming up in a notified industrial area.
	Give details of the existing social infrastructure around the proposed project	Majority of population around the project site are engaged in work or business activity. The infrastructure resources base of the region with reference to education, medical facility, drinking water,communication, road connectivity etc are good around the project area.
	Will the project cause adverse effects on local communities, disturbances to sacred sites or other cultural values? What are the safeguards proposed?	As the CBWTF is coming up in a notified industrial area, its impact on local society would be minimal. The proposed activities shall generate direct and indirect employment in the region during construction and operation of the project facility. This would marginally improve the economic status and would result in an increase in local skill levels. Periodic medical checkups of all the employees shall be done regularly.Workers will be provided with basic amenities like safe water supply, low cost sanitation facilities, first aid, required personal protective equipment, etc. Project proponent willconduct health awareness and will provide sanitation and educational aid and

		participate in tree plantation and water conservation program in local villages in partnership with village Panchayats.
	BUILDING MATERIALS	
	May involve the use of building materials with high –embodied energy. Are the construction materials produced with energy efficient process? (Give details of energy conservation measures in the selection of building materials and their energy efficiency)	Not considered as the project involves factory building only.
	Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?	• Water sprinkling to keep dust under control. • Reducing the speed of vehicle to reduce dust emissions. • keep all material storages adequately covered and contained so that they are not exposed to situations, where winds on site could lead to dust/particulate emissions • Regular maintenance of vehicles and machinery will be be carried out • Spills of dirt or dusty materials shall be cleaned up promptly so that the spilled materials do not become a source of fugitive emission. • Ambient air quality monitoring shall be carried out during construction phase. If monitored parameters are above the prescribed limits, suitable control measures will be taken.
	Are recycled materials used in roads and structures? State the extent of savings achieved?	Not considered as the project involves factory building only.
	Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the	Garbage generated will be collected and disposed as per MSW (M&H) Rule, 2000 as amended thereof.

	project.	
	RISK MANAGEMENT	
	Are there sufficient measures proposed for risk hazards in case of emergency such as accident at the site during construction & post construction phase.	Biomedical waste incinerators will be provided with fully automatic PLC & SCADA control which will help to reduce fire and explosion hazards. Autoclave for waste sterilization will have fully automaticcomputer based operation. Emergency Local Stop will be provided for equipment. Employees will be provided with PPEs Fire Extinguishers will be provided wherever required to ensure fire safety. Emergency provision for Fire Brigade from outside source.
	Storage of explosives/hazardous substance in detail	The proposed CBWTF will have an untreated waste storage area of size of 240 M2. The bio medical waste can be directly stored in dumper containers with lids of suitable size. The storage area will be at the entry point of the CBWTF to unload and store all biomedical wastes that have been transported to the facility by vehicle. The storage building is an enclosed structure with sufficient ventilations. Ensure processing of biomedical waste within the specified time.
	What precautions & safety measures are proposed against fire hazards? Furnish details of emergency plans	The following emergency provisions are incorporated : • Regular inspection of equipment • Emergency Local Stop for equipment. • Fire Extinguisher at critical locations • Use of personal protective equipment • Emergency provision forFire Brigade from outside source. • Onsite emergency plan will be followed.
	AESTHETICS	
	Will the proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes?	Not considered significant as the project is coming up in a notified industrial area. Green belt covering at 10 meter width around the periphery (4710 M^2) is envisaged in the project .

<table>
<tr><td></td><td>Are these considerations taken into account by the proponents?</td><td></td></tr>
<tr><td></td><td>Will there be any adverse impacts from new constructions on the existing structures? What are considerations taken into account?</td><td>No adverse impacts anticipated from the project on the existing structures</td></tr>
<tr><td></td><td>Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.</td><td>Not applicable as the project is coming up in a notified industrial area.</td></tr>
<tr><td></td><td>Are there any anthropological or archaeological sites or artefacts nearby? State if any other significant features in the vicinity of the proposed site have been considered</td><td>There is no anthropological or archaeological sites or artefacts nearby.</td></tr>
<tr><td></td><td>Details of CSR activity and the amount set apart</td><td>It is estimated to utilize minimum of 1% of the net profit for CSR activities .
<table>
<tr><th>Parameters</th><th>Immediate Intervention Plan</th></tr>
<tr><td>Health</td><td>Health awareness</td></tr>
<tr><td></td><td>Awareness on various socio-medical issues</td></tr>
<tr><td>Education</td><td>School facility up-gradation according to specific needs</td></tr>
<tr><td></td><td>Scholarship programs at primary and secondary level</td></tr>
<tr><td>Employability</td><td>Skill building among women</td></tr>
<tr><td>Environment</td><td>Partnering on providing sanitation and drinking wate</td></tr>
<tr><td></td><td>Development of green belts and tree plantation</td></tr>
</table></td></tr>
<tr><td></td><td>Details of NABET approved EIA Consultant engaged-Their name, address and accreditation details</td><td>Shivalik Solid Waste Management Ltd.
Nalagarh, Solan, Himachal Pradesh
NABET certificate No.: NABET /EIA/1619, issue date 28 March 2017 and expiry date 16 Feb 2019.</td></tr>
<tr><td></td><td>Details of Authorized Signatory and address for correspondence</td><td>Dr.N.K.Pillai
Chief Executive Officer</td></tr>
</table>

		Kerala Enviro Infrastructure Ltd. (KEIL), TSDF Project, Inside FACT-CD campus, Ambalamedu, Kochi-682303, Kerala, Ph. 0484 -272 2041, 2141, 2142. e-mail ID-drnkpillai @gmail.com
	SUMMARY AND CONCLUSION	
	Overall justification for implementation of the project.	In Kerala adequate biomedical waste treatment facilities do not exist as on now. The only operational common biomedical waste treatment facility for the entire state of Kerala is at IMAGE , Palakkad. Due to this, presently biomedical waste is being transported by road for more than 150 km. The common facility is essential for effective treatment and disposal of biomedical wastes generated in the state. The proposed project has facilities for safe disposal of biomedical wastes. The Facility includes Incinerator, Autoclave, Shredder and Effluent Treatment Plant. In general, the project will have positive environmental impacts by biomedical waste management in scientific manner that will reduce the future health hazard. With the setting up of the CBWTF, there will be direct and indirect employment opportunities. Overall, the project will have positive impact on socio-economic profile . The project is technically feasible and financially viable. All the financial indicators are satisfactory. Financial viability is dependent on the facility being patronized. The project may be considered Non-polluting subject to the implementation of all the mitigation methods.
	Explanation of how adverse impact have been mitigated.	Water sprinkling will be done to keep dust under control during construction phase,. Air pollution control devices (APCD) for cleaning of gases from incinerator are provided to limit stack emissions within the limits prescribed by MOEF & CC/CPCB .

		For proper dispersion of emissions like sulphur dioxide & oxides of nitrogen etc from the incinerator, stack height meeting MoEF & CC/CPCB guidelines will be provided(minimum 30 metres height). Regular maintenance of APCD will be done to maintain their effectiveness. Low sulphur fuel like diesel will be used in the incinerator to reduce SO_2 emission. The fixed hearth type incinerator considered will meet the latest CPCPB Guidelines 2017 (revised draft). This technology is well proven and is widely used which gives assurance on its environmental performance. Controlled emission of gaseous and particulate matter from the incineration facility is not expected to have any adverse impact and ambient air quality is expected to be within standard. Use of combustion control and emission monitoring system. DG set will be used in emergency only. Fugitive emission due to shredding of treated waste for recycling will be controlled by containment. Liquid waste coming out during washing of area and scrubbing water(alkaline) bleed generated during cleaning of incineration gases will be treated in ETP to meet the norms prescribed by Central and State Pollution Control Boards. Waste water from Laboratory and domestic waste water will also be treated in the Effluent treatment plant. Treated water will be recycled for use in scrubber and for washing and cleaning etc. Any treated water used for gardening will undergo additional treatment like ultrafiltration to remove potential contamination of surface water Hazardous solid wastes generated like incinerator ash and ETP sludge will be disposed in existing secured landfill at KEIL. Storage of biomedical waste in closed containers and its processing within the time limit.

		It will be ensured that all vehicles used for transporting biomedical waste are having their "Pollution under Control" (PUC) certificates. The vehicles and machinery will be maintained periodically as per manufacturer's specification in order to ensure optimum fuel utilization. Air quality modeling shows that during operation of the CBWTF the ambient air quality around the project site will remain within the National Ambient Air Quality Standard. Green belt covering 10 meter width around the periphery (4710 M^2)will be developed on 30 % of total plant area. This will contribute in a positive manner towards mitigation of greenhouse gases. It is proposed to utilize solar energy for factory lighting.

2. The proposal was placed in the 62nd meeting of SEAC held on 06th& 07th September, 2016. Further to the intimation of SEAC, the proponent and the Consultant attended the meeting. A power point presentation about the salient features of the project was made. The Terms of Reference (ToR) have already been approved by the MoEF. They had insisted on a public hearing which the proponent has not complied with citing that the facility is coming up in a approved industrial park. But the Committee decided to insist for an exemption in this regard from the Ministry and decided to DEFER the item for field visit and for production of the above exemption from the Ministry.

Accordingly, the Subcommittee of SEAC conducted the field visit. Field inspection report is given below.

Field visit to the project site of Kerala Enviro infrastructure Ltd (Biomedical waste) inside the campus of FACT was carried out on 09.11.2016 by the sub-committee of SEAC, Kerala, comprising Sri. S. Ajaya Kumar, and Sri. John Mathai. The proponent Dr. N K Pillai and representatives were present at the site. The general layout of the plant, terrain conditions of the site, storm water management, other structures in the vicinity etc were examined.

The project is located on the north-western part of the FACT campus at Ambalamedu on a laterite mount with an elevation of about 25 m amsl and with gentle slope to north and west. The site is bordered on the north and west by the flood plain of Kadambrayar and its tributaries, on the east by the landfill facility and on the south by the units of FACT. An 18 m buffer zone is left as no development zone from the flood plain and is presently under thick

vegetation cover. The laterite covered upper part has been excavated and flattened to house the existing waste management facilities. The gypsum dump yard and landfill are on the eastern side. Settlement is not seen within 500 m of the unit. The major Seaport-Airport road is seen within 1 km west of this site

Following clarification may be sought from the Proponent for greater clarity

1. *A large scale map (1: 10,000scale) covering an area of 2 km radius around this facility may be provide indicating a) all man-made structures like dwelling units, road network, institutions, commercial centres etc b) natural features like water bodies and dense vegetated areas. Establishments within the limits FACT, BPCL and Infopark should be clearly labelled.*
2. *A detailed layout (drawn to scale) of the plant especially waste storage rooms, incinerator, different kinds of waste treatment facility, pollution control devices, vehicle washing, parking, workers rooms, green belt etc*
3. *From the present layout of the unit, it appears that different functional units are placed very close such that free space is negligible. Being a waste management facility it is better to provide a bit more open space for which additional land may be required.*
4. *Considering the general slope of the site towards north and west, Storm water management plan with connectivity to nearby low lying flood plains should be provided as it is not clear from the drawings. Care to be taken to prevent contamination with the waste generated from the unit. Soil profile data to be provided to assess the nature of sub-strata*
5. *The capacity of the room for the storage of treated waste waiting to be taken to the landfill/recycling need enhancement.*
6. *Anticipated emission from the stack is to be quantified and given. The dissipation rate with distance should be computed such that it is rendered harmless at the periphery. Mechanism for the continuous monitoring of stack emission is to be elaborated.*
7. *Maximise use of solar energy. The detailed plan with quantity to be given.*
8. *Source of water is mentioned to be from FACT for which assurance is required.*
9. *Additional treatment facility for liquid effluents such that it is diluted much below the permissible values considering the proximity of Kudumbiyur.*

3. The proposal was considered in the 66th meeting of SEAC held on 19th December, 2016. The Committee appraised the proposal based on Form I, Form I A, field inspection report of the Sub Committee and all other documents submitted with the proposal. The Committee noted the observations of the Subcommittee and deferred for the submission of EIA study report.

Public Hearing report was also received from Kerala State Pollution Control Board. Subsequently the proponent has submitted the EIA study report.

4. The proposal was again placed in the 70th meeting of SEAC held on 04th & 05th April 2017. Further to the intimation of SEAC, the proponent and engineer attended the meeting

and the engineer made a power point presentation about the salient features of the project briefly. The Committee appraised the proposal based on Form 1, Form I A and conceptual plan.

The Committee suggested the proponent, to examine using historic data, the relative change in the air quality in the vicinity of KEIL after the commencement of its operations. Similarly an analysis of the air quality in the neighbourhood of already existing bio-medical waste treatment plant at Palghat sourcing data from the Pollution Control Board will also be helpful to critically appraise the proposal. The Committee deferred the item for submission of the above analysis.

The proponent has submitted the report of analysis sought by 70th SEAC.

5. The proposal was placed in the 72nd Meeting of SEAC held on 08th& 09th May, 2017. On further examination of documents the Committee decided to seek clarification/comments of the proponent on the various issues raised in below.

1) The project area has been reported to be enhanced to 3.5 hectares, but the plan enclosed in the report does not reflect any change from the original 2.5 ha. There must be document also to indicate the enhancement of the area.

2) As per the recommendations of the site visit, (1) a large scale map (1: 10,000 scale) covering an area of 2 km radius around this facility was to be provided indicating a) all man-made structures like dwelling units, road network, institutions, commercial centres etc b) natural features like water bodies and dense vegetated areas. Establishments within the limits FACT, BPCL and Info-park were to be clearly labelled. This document is not appended (2) A detailed layout (drawn to scale) of the facility especially waste storage rooms, incinerator, different kinds of waste treatment facility, pollution control devices, vehicle washing, parking, workers rooms, green belt etc is not appended (3) Storm water management plan with connectivity to nearby low lying flood plains are to be provided in the drawings (4) The capacity of the room for the storage of treated waste waiting to be taken to the landfill/recycling was to be enhanced (5) Anticipated emission from the stack was to be quantified and given. The dissipation rate with distance is not seen computed such that it is rendered harmless at the periphery (6) A plan to maximise use of solar energy (7) Additional treatment facility for liquid effluents such that it is diluted much below the permissible values considering the proximity of Kadambrayar.

3) The existing rate of emission (PM 10 and 2.5) from the industry is close to the permissible limits and additional emission from the proposed CBWTF is likely to enhance the emission rate beyond the permissible levels. Hence mechanism for the strict control and monitoring is to be ensured. One of the suggestions can be to ensure that incinerators are electrically operated instead of oil firing.

4) Pits for the disposal of treated sharp items like needles are to be constructed with concrete lining of suitable thickness so as to prevent any type of contamination with groundwater.

5) Entire Waste water including domestic waste water will be treated and the treated water will be recycled.

6) Daily log of incoming and outgoing material will be maintained. The in house lab shall maintain up to date the quality reports

7) Parking facility for the vehicles need elaboration

8) All the vehicles that enter into this facility need a certain level of cleaning/disinfection when it is taken out

9) The land use map provided by the consultant shows 43% built up and 29% mangrove vegetation within 2 km of the facility. It may be verified and reported back whether 29% of the surrounding area is under mangrove vegetation.

The Committee decided to defer the item for considering after the response from the proponent. The proponent has submitted the documents sought by 72nd SEAC meeting.

6. The proposal was placed in the 77th Meeting of SEAC held on 07th August, 2017 . The Committee decided to defer the item for a personal hearing of the proponent.

7. The proposal was considered in the 78th meeting SEAC held on 23rd August, 2017. The proponent appeared before the Committee and explained the replies submitted in their letter no. KEIL/KWM/1/2017 dated 19th May 2017 to the various points raised in the 72nd meeting of the Committee. The Committee took the replies and the attached documents into record and decided to **Recommend issuance of EC** subject to general conditions in addition to the following specific conditions.

1. *The project area will be enhanced to 3.5 acres (1.42 ha)*
2. *Emission from the stack should be constantly monitored to ensure that it is rendered harmless at the periphery.*
3. *Additional treatment facility should ensure that the liquid effluents are diluted much below the permissible values considering the proximity of Kadambrayar river.*
4. *Pits for the disposal of treated sharps like needles are to be constructed with concrete lining of suitable thickness so as to prevent any type of contamination with groundwater.*

To,

5. *Entire Waste water including domestic waste water will be treated and the treated water will be recycled.*
6. *Daily log of incoming and outgoing material will be maintained. The in house lab shall maintain up to date the quality reports.*
7. *All the vehicles that enter into this facility need a certain level of cleaning/disinfection when it is taken out.*

8. The proposal was considered in the 74th meeting SEIAA held on 09.10.2017. Authority accepted the recommendation of SEAC and decided to issue EC subject to general conditions in addition to the following specific conditions.

1. *The project area will be enhanced to 3.5 acres (1.42 ha)*
2. *Emission from the stack should be constantly monitored to ensure that it is rendered harmless at the periphery.*
3. *Additional treatment facility should ensure that the liquid effluents are diluted much below the permissible values considering the proximity of Kadambrayar river.*
4. *Pits for the disposal of treated sharps like needles are to be constructed with concrete lining of suitable thickness so as to prevent any type of contamination with groundwater.*
5. *Entire Waste water including domestic waste water will be treated and the treated water will be recycled.*
6. *Daily log of incoming and outgoing material will be maintained. The in house lab shall maintain up to date the quality reports.*
7. *All the vehicles that enter into this facility need a certain level of cleaning/disinfection when it is taken out.*
8. *The Authority also insist that the on-time display for monitoring of the effluents, particularly of each pollutant for the information of the public should be commenced.*

A notarised affidavit that all the conditions shall be strictly implemented should be submitted before the issuance of EC.

9. The proponent has submitted the affidavit received dated 11.11.2017 and stating that all the specific and general conditions shall be strictly implemented. Environmental Clearance as per the EIA notification 2006 is therefore granted to proposed Common Biomedical Waste Treatment Facility (CBWTF) by Dr. N K Pillai, Chief Executive Officer, M/s Kerala Enviro Infrastructure Limited in Sy No. 205 at Puthenkurissu Village, Kunnathunadu Taluk, Ernakulam district, Kerala subject to the specific conditions mentioned in para 8 above, the usual general conditions for projects other than mining appended hereto and the general green conditions applicable for construction projects should be strictly adhered to.

10. The clearance 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-1A, Environment Management Plan as submitted. 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.

11. Validity of the Environmental Clearance will be five 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 or genuine complaints from residents within the scrutiny area of the project.

12. Compliance of the conditions herein will be monitored by the State Environment Impact Assessment Authority 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, Ernakulam to take legal action under the Environment (Protection) Act 1986.

iii. The given address for correspondence with the authorized signatory of the project is, Dr. N K Pillai., Chief Executive Officer, M/s Kerala Enviro Infrastructure Limited., inside FACT-CD campus, Ambalamedu, Ernakulam- 682303.

Sd/-

JAMES VARGHESE.I.A.S,
Member Secretary (SEIAA)

To,

Dr. N K Pillai.,
Chief Executive Officer,
M/s Kerala Enviro Infrastructure Limited.,
inside FACT-CD campus,
Ambalamedu, Ernakulam- 682303.

Copy to:

1. MoEF Regional Office, Southern Zone, Kendriya Sadan, 4th Floor, E&F Wing, II Block, Koramangala, Bangalore-560034
2. The Additional Chief Secretary to Government, Environment Department
3. The District Collector, Ernakulam
4. The Tahsildhar, Kunnathunadu Taluk, Ernakulam district
5. The Member Secretary, Kerala State Pollution Control Board
6. The Director, Dept. of Environment and Climate Change, Govt. of Kerala, Tvm-24
7. The Secretary, Corporation of Cochin Zonal Office, AB Selam Rd, Jew Town, Mattancherry, Kochi - 682002
8. Chairman, SEIAA, Kerala
9. Website
10. Stock file
11. O/c

Forwarded/By Order

Administrator, SEIAA

General Conditions for Bio-Medical waste treatment plants

1. The waste shall be treated and disposed of in accordance with Schedule I, and in compliance with the standards prescribed in Schedule V of Bio Medical Waste Mangement and handling Rules.
2. Bio-Medical waste shall not be mixed with other wastes and the waste shall be segregated into labelled containers/bags at the point of generation prior to its storage,transportation, treatment and disposal.
3. Plastic wastes should be treated and disposed separately.
4. Untreated biomedical waste shall be transported only in such vehicle as may be authorized for the purpose by the competent authority as specified by the government.
5. The base of the waste cabin shall be leak proof to avoid pilferage of liquid during transportation and the inner surface of the waste cabin shall be made of smooth surface to minimize water retention. The waste cabin shall be so designed that it is easy to wash and disinfect.
6. Every time a vehicle is unloaded, the vehicle and empty waste containers shall be washed properly and disinfect.
7. No treated bio-medical waste shall be kept stored beyond a period of 48 hours.
8. Adopt suitable design criteria for incinerators, Incinerator room and waste storage room for better performance.
9. The proponent should get authorizations and other statutory clearances from the Government Departments/agencies for the functioning as per rules.
10. The proponent shall maintain records related to the generation, collection, reception, storage, transportation, treatment, disposal and / or any form of handling of bio-medical waste in accordance with rules.
11. The proponent should take adequate measures to prevent the contamination of polluting gas/effluents/ashes to air, water and land.
12. The equipments used for the treatment should be cleaned everyday and the waste water should be treated before further usage.
13. No effluent should be disacharged out of the premises.
14. Technology and capacity of the STP to be indicated with discharge point (if any) of the treated effluent.
15. Generation of solar energy to be mandatory for own use and/or to be provided to the grid.
16. Rain Water Harvesting capacity should be installed as per the prevailing provisions of KMBR / KPBR, unless otherwise specified elsewhere.
17. Environment Monitoring Cell as agreed under the affidavit filed by the proponent should be formed and made functional.
18. High walls, fencing and guarded gates shall be provided at the facility to prevent unauthorized access to the site by humans and livestock.
19. Greenbelt should be provided by using common local tree species around the project area.

20. Waste such as incineration ash generated in the process of incineration shall be stored in a separate area under the shed so as to avoid entry of rain water during the monsoon.
21. Provision for parking shall be made within the confines of the site for parking of required number of vehicles, loading and unloading of the vehicles meant for transporting waste to and from the facility.
22. An identification board of durable material and finish shall be displayed at the entrance to the facility. This shall clearly display the name of the facility, the name, address and telephone number of the operator and the prescribed authority, the hours of operation and the telephone numbers of the personnel to be contacted in the event of an emergency.
23. Fire safety equipment such as sand buckets and fire extinguishers should be provided at all the salient points as per Fire and Safety Regulations.
24. Measures shall be implemented to control pests and insects at the site.
25. Necessary provision shall be made to prevent and control noise generated, if any, due to the activities at the site.
26. The conditions specified in the Companies Act, 2013 should be observed for Corporate Social Responsibility.

27. 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.

28. 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.

29. 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.

30. 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.

31. 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.

32. 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.

33. 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.

For Member Secretary, SEIAA


STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, KERALA