Validity expires on 05.03.2025

सत्यमेव जयते

Proceedings of the State Environment Impact Assessment Authority Kerala

Present: Prof. (Dr.) K.P. Joy, Chairman, Dr. J. Subhashini, Member & Sri. P.H.Kurian I.A.S Member Secretary.

Sub: **SEIAA-Environmental Clearance for the proposed Cochin Cancer Research Centre in Survey. Nos. 321 Part 1, Block No.6 at Thrikkakara North Village, Kanayannur Taluk, Ernakulam District, Kerala by Sri.K.Mohammed Y. Safirulla I.A.S – Granted - Orders issued**

State Environment Impact Assessment Authority, Kerala

No. 1150/EC/SEIAA/ KL/2017 dated, Thiruvananthapuram 06.03.2018

Ref: 1. Application received on 23.10.2017 from Sri.K.Mohammed Y Safirulla I.A.S, District Collector, Civil Station, Echamuku, Thrikkakara, Kakkanad, Kerala – 682030
2. Minutes of the 81st meeting of SEAC held on 30th & 31st October 2017
3. Minutes of the 82nd meeting of SEAC held on 25th November 2017
4. The Sub Committee report of SEAC held on 04.12.2017
5. Minutes of the 83rd meeting of SEAC held on 20th & 21st December 2017.
6. Minutes of the 79th meeting of SEIAA held on 09th January 2018
7. Affidavit dated 19.02.2018 from Sri.K.Mohammed Y Safirulla I.A.S, District Collector, Ernakulam

ENVIRONMENTAL CLEARANCE NO.29/2018

Sri.K.Mohammed Y Safirulla I.A.S, Special Officer & District Collector, Civil Station, Echamuku, Thrikkakara, Kakkanad, Kerala – 682030 vide his application received on 23.10.2017, has sought Environmental Clearance under EIA Notification, 2006 for the proposed Cochin Cancer Research Centre in Survey. Nos. 321 Part 1, Block No.6 at Thrikkakara North Village, Kanayannur Taluk, Ernakulam District, Kerala. It is interalia, noted that the project comes under the Category B, 8(a) of Schedule of EIA Notification 2006.

The total plot area of the proposed project is 4.90479 ha. The total built-up area of the project is about 49896 sq.m. The total project' cost is Rs. 355 Crores (as per the Administrative Sanction).

Details of the project as provided by the project proponent.

BASIC INFORMATION OF BUILDING PROJECT
PART A

PROJECT DETAILS			
File No	1150/EC/SEIAA/KL/2017		
Name /Title of the project	Establishment of Cochin Cancer Research Centre at Kalamassery		
Name and address of project proponent.	Shri. K. Mohammed Y. Safirulla IAS, Special Officer, Cochin Cancer Research Centre, Kalamassery, Kerala – 683503		
Owner of the land	The Health and Family Welfare Department, Govt. of Kerala		
Survey Nos. District/Taluk/ and Village etc.	Location	Kalamassery	
	Survey No.	321 Part 1	
	Village	Thrikkakara North Village	
	Taluk	Kanayannur Taluk	
Category/Sub Category and Schedule	Category B, Schedule 8(a)		
Date of submission of Application	Online Submission was made on 29/07/2017		
Total Built up Area & No. of Floors	Total Built up Area	49896.0 sqm	
	No. of Floors	9 (LG3, LG2, LG1, G+5)	
No. of apartments	Nil		
Height of the building from the ground level	25m		
GPS Co-ordinate	Along the boundary at 4 Corners of the Plot		
	Point	**Longitude**	**Latitude**
	A	10° 3'11.50"N	76°21'10.33"
	B	10° 3'20.23"N	76°21'22.03"E
	C	10° 3'9.00"N	76°21'27.28"E
	D	10° 3'3.31"N	76°21'16.23"E

Brief description of the project.	The proposed project, "Establishment of Cochin Cancer Research Center," is mainly aimed at facilitating advanced treatment and medication for Cancer Patients across Kerala, not limiting to Ernakulam District. The Health and Family Welfare Department, Govt. of Kerala, proposes to establish the project vide G.O (MS) No. 39/2014/H&FWD. The hospital will act as a dedicated facility with advanced treatment facilities for the public identified at an adjacent plot to existing Medical college with dedicated IP/OP facilities for patients. Infrastructure is proposed in due consideration of environmental aspectsie, utilizing the existing terrain along with adequate facilities for water, waste management, parking etc. with resource optimization with RWH ponds, reuse of water and solar lighting.	
Is it a new Project or expansion/modification of an existing project?	New	
Details of the Project Cost	Rs. 355 Crores (as per the Administrative Sanction)	
If CRZ recommendation applicable?	N/A	
Distance from nearby habitation	Thevakkal& HMT Colony – Approx. at an aerial extend of 1.2Km	
Distance from nearby forest, if applicable	No forest area comes under the 10 km vicinity	
Distance from protected area, Wildlife Sanctuary, National Park etc.	Wildlife Sanctuary	Mangalavanam Bird Sanctuary- 11.5Km (15 Km road distance)
	National Park	Nil
Distance from nearby streams/rivers/National Highway Roads and Airport	Rivers	Manakkakkadavu River- 4Km
	National Highway Roads	NH 66 Salem-Kanyakumari - 3.276Km
	Airport	Cochin International Terminal, Nedumbassery - 12 Km
Is ESA applicable? If so, distance from ESA limit	N/A	
IMPACT ON WATER		
Details of water requirement per day in KLD	The water demand during construction phase is 14.25 KLD. The Water demand during operational phase is 270 KLD	
Water source/sources.	Domestic demand of the hospital is planned to be availed from Kerala Water Authority (KWA). While the treated water will be reused for the flushing, landscaping and chiller requirements. A rainwater harvesting tank of capacity 4, 50,000 litres and a percolation pond of capacity 5000m^3 is integrated in project design as alternative source.	
Details of water requirements met from water harvesting.	A rainwater harvesting tank of capacity 4, 50,000 liters and a percolation pond of capacity 5000m^3 is proposed as rainwater harvesting structures.	

<table>
<tr><td>What are the impacts of the proposal on the ground water?</td><td>The project does not envisage the extraction of ground water. Hence no impacts is anticipated on the ground water.
A percolation pond of capacity 5000m^3 is proposed for the collection rainwater from the site, which will be used for recharging the ground water and also used as one of the water source.</td></tr>
<tr><td colspan="2">WASTE MANAGEMENT</td></tr>
<tr><td>Explain the facilities for Liquid waste Management</td><td><u>Construction phase:</u>
The liquid waste generated during the construction phase will be treated in septic tank followed by soak pit.
<u>Operation phase</u>
A STP of capacity 300KLD is proposed for the treatment of liquid waste generated form the proposed facility.</td></tr>
<tr><td>Solid Waste Management</td><td>
<table>
<tr><td colspan="2"><u>Construction Phase</u></td></tr>
<tr><td>Type of waste generated</td><td>Mode of disposal</td></tr>
<tr><td>Construction Waste</td><td>• Debris will be used on site for filling and leveling of the access yards.
• Recyclables will be collected, stored and send to market.</td></tr>
<tr><td>Solid Waste</td><td>• Bio degradable – During construction phase waste shall be collected in designated bins and composted onsite.
• Non bio degradable – Shall be collected in designated bins and send to vendors for recycling.</td></tr>
<tr><td colspan="2"><u>Operation Phase</u></td></tr>
<tr><td>Solid Waste</td><td>The solid waste generated during the operation phase include garbage and other solid waste.
The management practice will be in compliance with Solid Waste Management Rules 2016. Secondary waste storage are for the collection of solid waste is proposed for the facility.

The Solid waste will be segregated at the source of generation. The solid waste generated will be segregated in to three streams, Wet (Biodegradable), Dry (Plastic, Paper, metal, wood, etc.) and domestic hazardous wastes (diapers, napkins, empty containers of cleaning agents, mosquito repellents, etc.) and handover segregated wastes to the storage area.

Bio Medical Waste Management will done as per as per bio medical waste management rule 2016.
The mechanism proposed for the management of the biomedical waste involve following steps.</td></tr>
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</td></tr>
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	• Collection and segregation • Packing labelling and transportation • Storage in secondary storage area • Treatment and disposal Details of the same is provided in the waste management plan attached Annexure IX of Form IA.
E-Waste Management	E waste generated during the construction and operation phase will be minimal. However, during both phases, the E-waste will be stored in secondary storage area and send to Authorized E-Waste disposers for recycling / reusing.
Facilities for Sewage Treatment Plant	STP of capacity 300 KLD is proposed for the treatment of liquid waste generated from the proposed facilities.
How much of the water requirement can be met from the recycling of treated waste water? (Facilities for liquid waste treatment)	During the operational phase, STP of capacity 300 KLD is proposed for thetreatment off waste water generated from the proposed facilities. It is estimated thatthe total treated water will be 275 KLD under maximum occupancy. The treated water will be then used for the flushing (90KLD) and landscaping purpose (69 KLD). Surplus water will be fed to chillers (116 KLD).
What is the incremental pollution load from wastewater generated from the proposed activities?	No incremental pollution is anticipated as the sewage generated is proposed for recycling to meet non-contact requirements such as flushing, landscaping etc. in the proposed project. The treated water meeting the standards as specified in IS 10500 will reused for flushing and gardening and for chillers. Hence no incremental pollution load is anticipated.
How is the storm water from within the site managed?	The proposed development will enhance the quantity of run off from the site. The rainwater falling inside the site will be channelized using a proper drainage network (300mm & 500mm pipe) to the proposed percolation pond of capacity 5000m^3.
Will the deployment of construction laborers particularly in the peak period lead to unsanitary conditions around the project site(Justify with proper explanation)	The construction workers would be accommodated offsite. The construction contract will strictly mandate the provisions for the construction workers as per the prevailing labour rules including safe drinking water, sanitation etc. Along the proposed project site also, adequate onsite sanitary facilities shall be provided to the construction labors including sufficient number of toilets connected with septic tank followed by soak pit for male and female employees separately.
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)	During the construction period adequate no of toilets will be provided for male and female workers with adequate water supply. It is proposed to provide portable toilets at the construction site and the night soil from these to be disposed through designated septic tanks. During the operational phase, STP of capacity 300 KLD will be provided for the treatment off sewage generated from the proposed facilities. It is estimated that the total treated water will be 275 KLD under maximum occupancy. The treated water will be then used for the flushing and

	landscaping purpose and also fed to chillers.
Give details of dual plumbing system if treated waste is used for flushing of toilets or any other use.	Dual plumping system is integrated in the facility for use of recycled water for flushing.
TRAFFIC MANAGEMENT	
Sufficiency of Parking Space (Explain)	Complied with KMBR requirements as below. Two Wheeler Parking: 624 Four Wheeler Parking: 500
Width of access road	The proposed site is accessible directly from the Kalamassery -HMT road of 15m wide with entry and exist duly separated to access Cancer Hospital. Internal roads are planned with 10 m wide (including drainage and footpath)
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?	The anticipated power requirement is: 4000KVA Sources of supply: KSEB Backup source: DG set – 3 numbers of 1500 KVA DG set Energy conservation methods considered: • Installation of Solar Panels • Incorporating LED lights
What type of, and capacity of power back-up to you plan to provide?	Power backup facility: 3 numbers of 1500 KVA DG set
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?	Plain glass with thermal transmittance (U) 0.5 W/m2oC will be provided
What passive solar architectural features are being used in the building? Illustrate the applications made in the proposed project	The solar heating of the building envelope is minimized by providing adequate shading.
Does the layout of streets & buildings maximize the potential for solar energy devices? Have you considered the use of street lighting, emergency lighting and solar hot water systems for use in the building complex? Substantiate with details	Yes. The building shall have solar photovoltaic power generation system. Rooftop solar panels of 300 KVA capacity is proposed to meet power requirements of street lights and internal common area lighting.
Is the shading effectively used to reduce cooling/heating loads? What principles have been used to maximize the shading of Walls on the East	• Projections, shades and louvers would be provided to reduce direct solar heating. It is estimated that the proposed shading system saves 10-15% of total energy conception and to admit airflow. • Open area would be planted with trees so as to shade

and the West and the Roof? How much energy saving has been effected?	paved areas and external walls • Roofs will be provided with a layer of material with high solar reflectance and low thermal conductivity (Acrylic, silicone, or urethane coatings). Moreover, solar panels provided on the building will also give shades to the roof.
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.	Yes. The structure use energy-efficient space conditioning, lighting and mechanical systems. The chillers proposed to provide are free of CFC and HCFC emissions
What are the likely effects of the building activity in altering the micro-climate? Provide a self-assessment on the likely impacts of the proposed construction on creation of heat island & inversion effects?	The project site would be surrounded with roads and buildings contributing to the heat island effect. However, this can be reduced by: • Green belt development along the access roads, parking lot and available open areas to provide shading to paved areas, external walls etc. • Painting roof with white color / covering roof with high solar reflectance and low thermal conductivity material (acrylic, silicone, urethane coatings), to reflect heat
What are the thermal characteristics of the building envelope? (a) roof (b) external walls; and (c) fenestration? Give details of the materials used.	Roof: R values of concrete: 0.78 – 1.25 $km^2 W^{-1}$ External Walls: Brick : 0.87 $km^2 W^{-1}$ Fenestration: Steel : 1.07 – 1.25 $km^2 W^{-1}$
What is the rate of air non-conventional energy technologies are utilized in the overall energy consumption? Provide details of the renewable energy technologies used.	Solar Photovoltaic System
Details of renewable energy (non – conventional) used.	Solar Photovoltaic System
IMPACT ON AIR ENVIRONMENT	
What are the mitigation measures on generation of dust, smoke , odors, fumes or hazardous gases	**Construction Phase**: The dust generation due to site clearance, excavation and material transit along the temporary access roads will be the key sources of air emission during construction phase. The site will be completely fenced with vertical GI\Tin\shading clothe or anyappropriate material to avoid spreading of dust

	outside the project boundary. Sprinkling of water along the access and construction areas will be made mandatory to arrest the dust spreading and the vehicle transporting the construction materials will be made only through covered transit. Vehicles and machineries used in the construction activities would be having valid PUC certificate as per the construction contract mandate. **Operational Phase**: The project envisages no air pollutants emissions except DG sets during power failure. DG set would be mandated to comply with the CPCB guidelines on emission.
Details of internal traffic management of the site.	During the construction phase, designated areas would be allocated for construction material storage and transit routes will be identified in the project initiation phase itself including the material transit routes from outside. During the operation phase separate entry and exist to access the hospital is provided with internal circulation with road of width 10m.
Details of noise from traffic, machines and vibrator and mitigation measures	**Construction Phase** • Well maintained drilling equipments will be used • Diesel generator shall have noise control measures (acoustic enclosures) • Workers shall not be exposed to sound more than 85 – 90 dB for more than eight hours a day and shall be provided with personal protective equipment (ear plugs). • Noise quality monitoring shall be conducted as per Environmental Monitoring Plan to confirm the compliance with the standard. • Construction contract shall clearly specify the use of equipment emitting noise of not greater than 90 dB (A) for the eight hour operation shift. • All the machines would comply with the PUC norms set by CPCB. • Machines will be maintained periodically to meet CPCB standard • Appropriate fencing will be provided between construction site and existing activity area to reduce the propagation of sound **Operation Phase** • DG sets will be provided with acoustics enclosure. • The hospital areas would be provided with proper sign boards to reduce the noise level due to vehicle traffic including the premises.
Air quality monitoring in detail	Ambient Air Quality of the site was monitored at 4 locations. The quality of the ambient air is good as per the standard and it is within the limits of NAAQ Standards set by Central Pollution Control Board. Being a basic health service facility, no major air emission

	sources would be there during operation phase.
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.	The present project is a new facility and does not going to make shortage on parking spaces along the region. Adequate parking spaces as per the prevailing rules are integrated in the project design.
Provide details of the movement patterns with internal roads, bicycles tracks, Pedestrian pathways, footpaths etc., with areas under each category	Internal roads with 10m width is proposed in the project. This shall include drainage as well as footpath
Will there be significant increase in traffic noise & vibrations? Give details of the sources and the measures proposed for mitigation of the above.	No. **Construction Phase**: Ambient noise level would be slightly increased due to material transit and man and machinery operation during construction phase. However, being a medium scale infrastructure development project, the construction activities is not anticipated to have high noise level impact on the surrounding. **Operational Phase**: The noise level sources will be limited to the traffic operation, DG set and pumps, motors and which is not anticipated to contribute significantly to the ambient noise level. Proper signage's and facilities such as acoustic enclosures, anti-vibration pads etc for the mechanical equipment's will ensure the ambient noise level within the standard limits.
What will be impact of DG sets & other equipments on noise levels & vibration in & ambient air quality around the project site? Provide details	**Noise & Vibration**: The DG sets work during power failures only. DG sets with integral acoustic enclosure and exhaust muffler as per SPCB/CPCB guidelines shall be Installed. Hence, it does not have impact in and around project site **Ambient Air Quality**: The DG sets shall have stacks with adequate height as per SPCB/CPCB and hence does not have impact on ambient air quality of the project site.
IMPACT ON BIODIVERSITY AND ECO RESTORATION PROGRAMMES	
Will the project involve extensive clearing or modification of vegetation (Provide details)	No. The land was earlier forming part of the existing medical college operating which is subsequently earn marked for the proposed cancer hospital facility. Hence the area is occupied by shrubs, climbers, scattered growth of grasses,other herbs and alien weeds.Hence, no modification of vegetation is required
What ate the measures	Within the premises landscaping with speciessuitable to the

proposed to minimize the likely impact on vegetation (details of proposal for tree plantation/ landscaping)	site is being proposed to enhance the vegetation cover along the project area.
Is there any displacement of fauna – both terrestrial and aquatic – If so what are the mitigation measures? Presence of any endangered species or red listed category (in detail)	No.
SOCIO- ECONOMIC ASPECTS	
Will the proposal result in any change to the demographic structure of local population? Provide the details	No. Since the proposed plot was originally part of the existing Medical College and also since there is no land acquisition involved no demographic structure of local population is envisaged
Give details of the existing social infrastructure around the proposed project	The site is situated within the active zone of urban infrastructure development. Social Infrastructure around the Proposed Project are: Govt. Medical College, Ernakulam – 100m HMT Medical College Road – Bordering the Site KINFRA Hi Tech Park - 0.46Km National University of Advanced Legal Studies – 0.81 Km Axis Bank – 0.5Km Co-operative Bank – 0.45Km
Will the project cause adverse effects on local communities, disturbances to sacred sites or other cultural values? What are the safeguards proposed?	The proposed project being under the land already earmarked for health facilities without any land acquisition involved does not have adverse effects of local communities, sacred sites or other cultural values. However, during construction, influx of people and machinery to the project site is anticipated which is proposed to be managed through proper traffic management practices including identification of transit routes, material transit confining to non-peak hours with proper coverage etc to avoid impacts on local communities.
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	Environmental Friendly norms are considered for selection of building materials. The following methods are selected for building material decisions: . • Locally available materials would be utilized for construction • Recyclable materials shall be selected for construction • Fly ash and PCC cement bricks shall be used for construction • Locally available aggregates would be utilized

efficiency)	• Glass with low SHGC and high U value would be preferred
Transport and handling of materials during construction may result in pollution, noise & public nuisance. What measures are taken to minimize the impacts?	• The project site shall be appropriately isolated with GI fencing / tarpaulin shielding • Traffic management measures including identification of material transit routes, non peakhoures transit and avoiding spillage of construction materials shall be strictly complied. • Waste collection and management for both liquid and solid waste shall be strictly implemented. • Personal protective equipment shall be ensured for workers • Proper signage shall be installed for reducing honking keeping in view of the existing medical college premises and the construction activiites would be strictly monitored to avoid impact on near by medical college facility and its operation. • Water sprinkling shall be done to avoid particulate matter emissions • Construction contract shall mandate the Vehicles and Machineries utilized to comply with CPCB/SPCB noise control norms
Are recycled materials used in roads and structures? State the extent of savings achieved?	Locally available recyclable materials shall be used for roads and structures. The construction debris shall be reused to the maximum for the leveling of site. Bricks made from fly ash shall be used for pavements, sidewalls, boundaries for parks and RMC for construction etc.
Give details of the methods of collection, segregation & disposal of the garbage generated during the operation phases of the project.	The garbage generated during the operation phase shall be collected in designated color coded bins which shall then be stored in stipulated storage area. The existing solid waste management facility of the Kalamassery Municipality shall be utilized for garbage management.
RISK MANAGEMENT	
Are there sufficient measures proposed for hazardrisk in case of emergency such as accident at the site during construction & post construction phase.	Yes. Personal Protective Equipment and frequent supervision of employee, machinery and construction activity is proposed to avoid accidents and to safeguard the workers. First Aid shall also be employed. During operation phase, emergency evacuation plan for the building is proposed.
Storage of explosives/hazardous substance in detail	No explosives/hazardous substance are anticipated. However, management with isolated storage shall be provided
What precautions & safety measures are proposed against fire hazards? Furnish details of	Fire fighting facility is an integral part of the proposed infrastructure, which will be duly approved by the regulatory authority prior to operation of the hospital.

emergency plans	Floor wise fire fighting layout has already been submitted and a detailed emergency evacuation plan is also proposed and integrated in project design.
Litigation/court cases if any	N.A
AESTHETICS	
Willthe proposed constructions in any way result in the obstruction of a view, scenic amenity or landscapes? Are these considerations taken into account by the proponents?	No. The proposed construction does not obstruct view, scenic amenity or landscape in any way.
Will there be any adverse impacts from new onstructions on the existing structures? What are considerations taken into account?	The construction activity shall be carried out with GI fence / proper shielding with a consideration not to disturb the nearby existing structures and environment.
Whether there are any local considerations of urban form & urban design influencing the design criteria? They may be explicitly spelt out.	N/A
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	N/A
Details of CSR activity and the amount set apart per year	N/A
Details of NABET approved EIA Consultant engaged-Their name, address and accreditation details	KITCO Ltd. Address: KITCO Ltd., Femith's, P.B. No. 4407, Puthiya Road, N H Bypass, Vennala, Kochi – 682 028 Accreditation Status: Active Accreditation Number: NABET/EIA/SA/338 Accredited Sectors: 29, 33, 34, 37 & 38
Details of Authorized Signatory and address for correspondence	Shri. K. Mohammed Y. Safirulla IAS, Special Officer, Cochin Cancer Research Centre
SUMMARY AND CONCLUSION	
Overall justification for implementation of the project.	The proposed facility is to essentially serve the common public for advanced cancer treatment facilities as an initiative from the Government of Kerala, which is the basic and most needy infrastructure requirement of the present. The project design has been made with suitable integration of the various environmental aspects for the construction and operation phases towards avoiding, minimizing or mitigating the negative impacts and there by

	employing sustainable development through a detailed EMP
Explanation of how adverse impact has been mitigated.	A detailed EMP and Environmental Monitoring Mechanism including the Institutional Framework for implementing EMP are proposed for ensuring the impacts are avoided/minimized/mitigated and is suitably monitored for not exceeding the standards for effective implementation.

2. The proposal was placed in the 81st meeting of SEAC held on 30th& 31st October 2017 and decided to defer the item for field inspection. The Committee also directed the proponent to submit the following additional documents/details;

1) *Details of arrangements for the disposal of radio active waste.*
2) *STP should be shifted to a proper location, away from the vicinity of rainwater harvesting pond.*

Accordingly, inspection was conducted by a sub committee consisting of Sri Gopinathan V, Chairman, Sri S Ajayakumar and Sri John Mathai on 07/11/2017 and they submitted a report.

3. The proposal was placed in the 82nd meeting of SEAC held on 25th November 2017. The proposal was appraised by SEAC considering Form I, Form IA, Conceptual plan, field visit report and all other documents and details provided by the proponent. The consultants were asked to review their master plan based on the following observations

a) *While reviewing the master plan, the consultants may look into the possibility of using the area between main building and road almost at the level of the road and divert the vehicular entry from the side road which is preferred mode of entry.*
b) *Details of arrangements for the disposal of radioactive waste*
c) *STP should be shifted to a proper location, away from the vicinity of rainwater harvesting pond.*
d) *Since, Cancer hospital and the Medical college, Ernakulam are administrated by the bodies having District Collector as Chairman, the marshy area at the valley side which has high potential for being used as a perennial water source shall be combinely managed without reducing its total extend.*

The plot is adjacent to the proposed expansion of Medical College also proposed by the District Collector himself albeit in a different capacity. The proposed site is along the HMT – NAD road. This road is having adequate width divided by median. At present both sides are sparsely developed. However, this width will become inadequate once the proposed development on both sides of the road, including the proposed expansion of medical college and proposed cancer centre, is commissioned.

Entry to the medical college and cancer hospital is from the same HMT-NAD road. Entry to the cancer hospital is directly from this road. It is unsafe to provide direct entry to this road having speeding vehicle. It is ideal to have a entry to the cancer hospital utilizing the small portion of Medical College property abutting the HMT-NAD road. Parking for the medical college and cancer hospital can be located without creating problems for the

pedestrian and vehicular entry of patients and bystanders. Public transport stops can also be provided along HMT- NAD road taking land from the cancer centre/ medical college or both.

The Committee also decided to call the proponent and consultants of cancer hospital and Medical College, Ernakulam for a discussion with the Sub Committee on mutually convenient date at Trivandrum.

4. A meeting was conducted on 04.12.2017 by a subcommittee of SEAC consisting of Sri S Ajayaumar, Sri John Mathai, Sri Sreeekumaran Nair and Dr Oommen V Oommen and submitted their report.

5. The proposal was placed in the 83rd meeting of SEAC held on 20th& 21st December 2017. The proposal was appraised by SEAC considering Form I, Form IA, Conceptual plan, field visit report and all other documents and details provided by the proponent. A Subcommittee of the SEAC conducted an inspection of the proposed sites for the expansion of the Kochi Medical College and for the proposed Kochi Cancer Centre. Both the sites are adjoining and proposed to be developed by two separate entities, however functioning under the chairman ship of the District Collector, Ernakulam. The sites are adjoining and served by the same road which leads to Navel Armament Depot. This road is separated by a median and has a curved alignment near the proposed entry of Cancer Centre. Once traffic volume picks up such nature of the road may be a source for accidents. The terrain of both the plot is undulating and there is possibility of blocking storm water and contaminating the fresh water with the leachates flowing from other side. These issues necessitate a holistic outlook considering both the plots together. Therefore the consultants and project proponents were asked to take a review of their proposal considering the issues of developing both institutions together and present their new proposal which will be reviewed by a Sub committee of SEAC. The proponent of both projects did such a review and prepared a plan taking into account the requirements of both the proposals. They presented it before the SEAC Subcommittee on 4.12.2017. The Subcommittee agreed to the proposal put forward by the proponents. The proponent subsequently submitted the revised plan. Considering all aspects of the proposals the Committee decided to recommend to issue EC subject to the following specific conditions over and above the general conditions.

1. *A new road of 10 m width is proposed along the common boundary which should be provided with sufficient space and splay for the entry from the main road*
2. *Main entry of the Cancer Centre shall be from this road.*
3. *An alternate entry to the rear side of the Super Speciality Hospital shall also be provided from this road*
4. *Capacity of RWH shall be enhanced to 1000 m^3*
5. *Existing water body to be retained in its natural shape having an area of minimum 1 acre. Cutting and filling shall be balanced*
6. *Solar plant of a minimum capacity of 500 KW shall be installed*
7. *Storm water channels from the Cancer Centre and the Super Speciality block to be led into the existing pond. Recharge pits should also be provided in the elevated parts.*
8. *Parking space provided shall not be diverted for other use.*

6. The proposal was placed in the 79th meeting of SEIAA held on 09th January 2018. Authority accepted the recommendation of SEAC and decided to issue EC subject to general condition in addition to the specific conditions as suggested by SEAC. A notarised affidavit agreeing all the general and specific conditions should be submitted before the issuance of EC. The proponent has also submitted the affidavit vide reference 7th cited.

7. Environmental Clearance as per the EIA Notification 2006 is therefore granted for the proposed Cochin cancer Research Centre in Survey. Nos. 321 Part 1, Block No.6 at Thrikkakara North Village, Kanayannur Taluk, Ernakulam District, Kerala by Sri.K.Mohammed Y Safirulla I.A.S, Special Officer & District Collector, Civil Station, Echamuku, Thrikkakara, Kakkanad, Kerala – 682030, subject to the conditions in para 5 & 6 above and the usual general conditions for projects other than mining appended hereto and the following green conditions should be strictly adhered to.

Green Conditions.

1. *Adequate rain water harvesting facilities shall be arranged for.*
2. *Technology and capacity of the 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 facility for the buildings shall be provided.*
7. *Generation of solar energy to be mandatory for own use and/or to be provided to the grid.*
8. *There shall be no compromise on safety conditions and facilities to be provided by the project proponent*, which shall be ensured for occupation, regularisation or consent to operate.

8. The 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.

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

10. 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, Sri.K.Mohammed Y Safirulla I.A.S, District Collector, Civil Station, Echamuku, Thrikkakara, Kakkanad, Kerala – 682030.

Sd/-
P.H.KURIAN I.A.S
Member Secretary (SEIAA)

To,

Sri.K.Mohammed Y Safirulla I.A.S,
District Collector, Civil Station,
Echamuku, Thrikkakara, Kakkanad,
Kerala – 682030

Copy to:

1. MoEF Regional Office, Southern Zone, KendriyaSadan, 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 District Town Planner, Ernakulam
5. The Tahsildar, Kanayannur Taluk, Ernakulam
6. The Member Secretary, Kerala State Pollution Control Board
7. The Secretary, Kalamassery Municipality, Changampuzha Nagar P.O, Ernakulam – 682 033
8. Chairman, SEIAA, Kerala
9. Website
10. Stock file
11. O/c

ENVIRONMENT IMPACT ASSESSMENT AUTHORITY KERALA

Forwarded/By Order

Administrator, SEIAA

GENERAL CONDITIONS *(for projects other than mining)*

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

SPECIFIC CONDITIONS

I.Construction Phase

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

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

II. **Operation Phase**

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

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

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

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

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

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

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

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

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

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

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

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

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

III Post Operational Phase

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

For Member Secretary, SEIAA