

**MINUTES (Approved) OF THE 5<sup>TH</sup> MEETING OF STATE LEVEL EXPERT APPRAISAL COMMITTEE (SEAC) KERALA, HELD ON 7<sup>TH</sup> JULY, 2012 AT MELODY HALL, MASCOT HOTEL, THIRUVANANTHAPURAM**

The fifth meeting of SEAC Kerala was held on 7<sup>th</sup> July 2012 at Melody Hall, Mascot Hotel, Thiruvananthapuram. Representatives of project proponents/consultants attended the meeting at relevant durations. The agenda included the evaluation of four new projects and reconsideration of two old proposals. The meeting started at 9.15 am and the following members of SEAC Kerala were present in the meeting:

1. Dr. N.G.K. Pillai - Chairman, SEAC  
ICAR Emeritus Scientist &  
Former Director CMFRI
2. Dr. Oommen V. Oommen - Vice-Chairman, SEAC
3. Prof. (Dr.) K. Sajan - Member, SEAC
4. Dr. P.S. Harikumar - Member, SEAC
5. Dr. E.J. Joseph - Member, SEAC
6. Dr. E.A. Jayson - Member, SEAC
7. Dr. Harikrishnan K. - Member, SEAC
8. Dr. C.N. Mohanan - Member, SEAC
9. Dr. V. Anitha - Member, SEAC
10. Sri. John Mathai - Member, SEAC
11. Shri. P. Sreekantan Nair - Secretary, SEAC  
Director,  
Department of Environment & Climate Change

Chairman, SEAC welcomed all the participants. Thereafter, regular agenda items were taken up for deliberations:

**Item No. 05.01** Confirmation of the Minutes of the 4<sup>th</sup> meeting of State Level Expert Appraisal Committee (SEAC) Kerala, held on 2<sup>nd</sup> June, 2012 at Banquet Hall, Govt. Guest House, Thycaud, Thiruvananthapuram

Confirmed.

**Item No. 05.02**      **Action taken report on the decisions of the 4<sup>th</sup> SEAC meeting**

The item was noted.

**Item No. 05.03**      **Application for obtaining environmental clearance for the Construction of Residential Project (“OCEANA”) at Village Ernakulam, Taluk Kanayannur, Corporation of Cochin, District Ernakulam, Kerala in Sy. Nos. 843 by M/s Centurions Housing and Constructions Pvt. Ltd. (File No. 20/SEIAA/KL/718/2012)**

SEAC found the survey number given in KCZMA recommendation to Centurions Housing & Constructions Pvt. Ltd. (4787/07, 4788 and 4789/07) differs from the survey number of the proposed area (Sy. No. 843). So SEAC’s primary concern was to seek clarification from the proponent on this discrepancy and proceed the proposal for further consideration only on receipt of it. The proponent agreed to get it clarified with KCZMA.

It was also found that the proposed building abuts the creek on the southern side which cannot be permitted and so it is directed that a width of 15 m be maintained. The proponent mentioned here that a 12 m wide walkway is already provided between the water body and the project site as per the CZMP 1991. Cochin Backwaters is the nearest water body located at a distance of 12 m from the project site. There are 3 wells on the site for ground water abstraction. The reports on ground water quality showed values of TDS and hardness not confirming with the IS 10500 1991 quality and so it was directed that water should be treated before use. The committee was of the opinion that this increase in TDS may be due to the saline water intrusion because of the use of bore well already dug in the project site. Since no other water source is available, the proponent was reminded that their dependence on roof rain water is critical. Moreover the structure of roof provided was not suitable to tap rain water. So the proponent was advised to improve their rain water harvesting set up as the proposed one is insufficient to cater the required needs. The proponent was asked to collect data on assured rain water available by checking the rainfall data fortnightly to find out whether this source is sufficient as they have to depend only on roof rain water during rainy days. In view of Kochi receiving sufficient rainfall for the entire year, the committee advised to consider increasing the storage capacity of rain water harvesting unit. Since there is only one entry point to the project site, chances of congestion is more which has to be addressed appropriately and hence the proponent was directed to provide separate entry and exit or to widen the present internal roads for the free movement of vehicles. The proponent stated that they have set aside `10 crores towards their corporate

social responsibility. The beautification of 12 m walkway from the project site to Pachaalam is proposed to be done as a part of this. The water quality reports submitted by them did not show the date of sampling and so the proponent was directed to incorporate the same. The desirable limits of sulphate and phosphate as recorded in the laboratory reports were found to be wrong and the proponent was asked to clarify the same with the laboratory. The committee pointed out that the alternating sand and clay layer as shown in the soil analysis reports in 1 m bore hole is technically wrong. Moreover, the proportion of sand/silt/clay is also not provided in the geotechnical investigation reports. The committee was of the opinion that bore well is not feasible and the site is suitable to have only tube wells as the proposed project site is still in CRZ and they are not supposed to draw water up to 100 m through mechanized means. The committee appreciated the initiative taken by the proponent for green area development and the required provision given for disposal of biodegradable waste. There was concern if the maximum height of the proposed building exceeds the height as specified by the Southern Naval Command. Since the proponent has almost completed construction, it was decided to issue POST FACTO EC after the approval of SEIAA. Considering all the above, the SEAC directed the proponent to submit assurance for the following:

1. Topographic contour survey map
2. Cadastral map of the proposed area
3. Assurance in the form of affidavit that 15 m No Development Zone will be maintained on the southern side of the project site (on the side of the creek).
4. Assurance that IS codes 1893-2002, 456, 13920 shall be implemented.
5. RWH structure shall be sufficiently modified so as to increase the capacity of rain water harvesting.
6. Separate entry and exit points or the widening of the present entry/exit shall be provided for the free movement of vehicles to avoid traffic congestion.
7. Assurance that bore well construction shall be restricted as per permissions.
8. Certificate from the Southern Naval Command as to the height of the building that it has not exceeded the stipulations of Southern Naval Command.
9. A Certificate from the Forests and Wildlife Department regarding the distance of the Mangalavanam Bird Sanctuary from the project site.
10. An assurance in the form of affidavit that, before securing the occupancy certificate, the project proponent shall submit an affidavit to the LSG department that whatever commitments made before the SEAC and recommendations made by the SEAC/ SEIAA shall be fully complied with and at any later stage, if found not complied with, the

authorized signatory of the proponent shall be personally held responsible, should be submitted by the proponent.

The committee DEFERRED the proposal and further decided to have a SITE INSPECTION and fix the further course of action on the proposal only after getting the clarification on survey numbers.

**Item No. 05.04**     **Proposed Construction of a Residential cum Commercial Project at Vazhakkala Village, Kanayannur Taluk, Ernakulam District, Kerala in Re-Sy. No. 42/1, Block No. 9 by M/s Joyalukkas India Pvt. Ltd. (formerly Joy Alukkas Traders (India) Pvt. Ltd.) (File No. 21/SEIAA/KL/871/2012)**

The project proponent gave a brief description of their proposed project. The most important thing which raised concern among the members was the passing of a HT tower line of KSEB through western side the project site. Distance of the tower line with the topmost level of the building is very less and the proposed unit is below the tower line. The committee was of the general opinion that no new construction is permitted below the tower line and decided to get it clarified from KSEB. Since fire fighting equipments has to cross the electric lines without creating hazard during emergency, a minimum of 3.5 m open area has to be left from the tower line without erecting any structures. The proponent stated that single storied construction is permitted under the tower line and they have proposed open car parking below the tower line. They have left 5.5 m from the tower line. The committee decided to seek clarification in this regard from KSEB as to whether excavation/new structures (even like parking below ground level) are permitted by rule under the tower line. The committee suggested the project proponent to take up this as a model project putting basic requirements in place, since this is their pioneer venture. The rainwater harvesting structure proposed to be provided is good but is not in the drawings of conceptual plan which is not to scale. The size of the rain water harvesting structure is not mentioned. Water recharge pits shall be provided. Regarding the water quality report submitted by the proponent, the committee suggested to express the microbiological report as MPN/100ml rather than Cfu/ml. There is one well already in the site and one more well is proposed to be dug in the site as a source of water. The committee observed that the dependable source of water from wells may be inadequate as per the results of yield test conducted. The quality of rain water shall be monitored at least once in a week. The proponent has not mentioned anything on the disposal of demolished structures already in the site. It was also to be confirmed whether one-storey

excavation is permitted near to the high rise buildings. In Form- 1A of the application submitted, it is mentioned that the project site is located within the municipal limits of Thodupuzha municipality which is not so. The proponent was directed to correct the same as the site is located in Kanayannur taluk. Considering all the above, the SEAC directed the proponent to submit the following:

1. Proof of authorized signatory
2. Building plan superimposed on the cadastral map duly certified by Village Officer. The cadastral map should indicate both the survey number and resurvey number.
3. Affidavit in original regarding the constitution of environmental monitoring cell, providing fire fighting system, providing systems to minimize dust emissions, to provide adequate safety measures for the construction workers during the construction phase and to upload the following in the website of the project:
  - a) EC order
  - b) Status of compliance of the stipulated EC conditions
  - c) Results of monitoring data and update the same periodically AND
  - d) Send the copy of the EC to the LSG concerned
4. Certificate from KSEB stating that the required distance from the tower and height, as provided by the proponent is agreeable.
5. Specified statement of the horizontal and vertical distance from the KSEB tower.
6. A new conceptual plan incorporating the location of rain water harvesting structure specifying its size modified suitably.
7. Water budgeting for construction and operation phase.
8. Certificate from any accredited lab on the quality of rain water.
9. Assurance for implementation of IS codes 1893-2002, 456, 13920.
10. Assurance that they shall provide a protective wall around the 110 KV tower.
11. A Certificate from the Forests and Wildlife Department regarding the distance of the Mangalavanam Bird Sanctuary from the project site.
12. An assurance in the form of affidavit that, before securing the occupancy certificate, the project proponent shall submit an affidavit to the LSG department that whatever commitments made before the SEAC and recommendations made by the SEAC/ SEIAA shall be fully complied with and at any later stage, if found not complied with, the authorized signatory of the proponent shall be personally held responsible, should be submitted by the proponent.

The proposal has been DEFERRED for SITE INSPECTION.

**Item No. 05.05**      **Application for obtaining environmental clearance for the proposed construction of a Commercial Complex Project at Village Pettah, Taluk Thiruvananthapuram, District Thiruvananthapuram, Kerala in Sy. Nos. 1545, 1545/1-1, 1503/1, 1498/1, 1545/1-2, 1548/1, 1548/1-1, 1548, 1501/2, 1502, 1503/1, 1498/1, 1498/3, 1550/1-1, 1550/1-2, 1551/3-1, 1551/3-2, 1551/3-3, 1550/2, 1543/2-2, 1542/A-1, 1542/A-2, 1542/B, 1544/2, 1543/2-3, 1543/2, 1544/3 and 1544 by M/s Yespeesons Enterprises (File No: 24/SEIAA/KL/970/2012)**

The proponent was advised to develop a larger open well not exceeding 8 m below ground level to sustain the yield of the well. The proposal is RECOMMENDED for environmental clearance stipulating the following specific conditions:

1. Since the site is near the sea and the yield from the well is poor, it is advisable to go for open wells.
2. Channelize storm water runoff to drain into the water bodies present in the site which in turn can recharge the ground water without losing a single drop of water from the plot.
3. As per approved CRZ map there is no road marked. So an approximate 8 m wide area has to be left near the project site without erecting permanent structures.
4. Have larger diameter open wells and not to have deeper bore wells / filter point wells.
5. More green belts in the open area should be provided.
6. The quality of spill over effluent from STP shall be thoroughly monitored to keep it within limits before discharge.
7. Since the site is near Parvathi Puthanar r and comes under CRZ, the width of the creek from the side of the canal should be maintained as No Development Zone.
8. Level of the basement should be adjusted so that it does not affect free flow of ground water.

**Item No. 05.06**      **WP(C) 10656/2012 of Honourable High Court of Kerala filed by Sri. Jyothish Kumar-Order of the Hon. High Court to SEIAA to file a report regarding the averments made in the writ petition – Referred to SEAC to examine and report (File No. DoECC/E3/2026/2012)**

The report prepared was placed for discussion in the committee and was approved to be sent to SEIAA for further action.

**Item No. 05.07**

**Proposed Hospital Project - Smita Memorial Hospital And Research Centre, at Kumaramangalam Village, Thodupuzha Taluk, Idukki District, Kerala in Sy. Nos. 8/1A/15, 8/1A/5, 8/5/1, 8/1A/15, 8/1A-1 and 8/5/1 by M/s Smita Memorial Hospital and Research Centre (File No.23/SEIAA/KL/969/2012)**

Since the proposed project is construction of hospital and research centre, SEAC's primary concern was on the biomedical waste management as the biomedical storage facility is provided near the river side. The project proponent assured that the biomedical storage is limited to the basement level and not to the ground level and there are no chances of leaching and the storage is only temporary till it is handed over to authorized recyclers. SEAC gave strict warning that the biomedical waste should not contaminate the river nearby and it will be better to relocate the storage facility a little away from the river. The water quality reports showed high alkalinity which should be checked in such an area with laterite soil having acidic nature. The proponent also informed that they have got permission to draw 70 KL of water from Thodupuzha river and has submitted the copy of permission received from the irrigation department. The proponent has to ensure that flooding does not occur in the area. There is a purambokku land which is a part of the project site and this need to be avoided. The conceptual plan submitted did not show markings on the width of internal roads.

Considering all the above, the SEAC directed the proponent to submit the following:

1. Assurance that the height of the building shall be regulated as per the rules and a minimum 7 m wide road shall be left around the proposed construction.
2. A new conceptual plan marking the width of internal roads. (Internal circular roads around the hospital should have a uniform width of 5.5 m).
3. Cadastral map duly certified by Village Officer with the survey numbers specified.
4. Assurance that IS codes 1893-2002, 456, 13920 shall be implemented.
5. Assurance that proper measures shall be made to ensure that the biomedical wastes do not contaminate the nearby river.
6. Affidavit that no construction shall be made in the purambokku land.
7. Affidavit in original regarding the constitution of environmental monitoring cell, providing fire fighting system, providing systems to minimize dust emissions, to provide adequate safety measures for the construction workers during the construction phase and to upload the following in the website of the project:
  - a) EC order

- b) Status of compliance of the stipulated EC conditions
  - c) Results of monitoring data and update the same periodically AND
  - d) Send the copy of the EC to the LSG concerned
8. An assurance in the form of affidavit that, before securing the occupancy certificate, the project proponent shall submit an affidavit to the LSG department that whatever commitments made before the SEAC and recommendations made by the SEAC/ SEIAA shall be fully complied with and at any later stage, if found not complied with, the authorized signatory of the proponent shall be personally held responsible, should be submitted by the proponent.

The proposal has been DEFERRED for reconsideration on receipt of all the above..

**Item No. 05.08 Application for obtaining environmental clearance for the proposed Service Apartments cum Tourist Village Project, “SAILOR’S COVE”, at RS No. 5/3 in Pallikunnu Village and Panchayat and RS No. 178/4, 178/5, 179/5, 179/6 in Chirakkal Village and Panchayat, District Kannur, Kerala by M/s MIR Builders & Developers Pvt. Ltd. (File No. 25/SEIAA/KL/2122/2012)**

Since this proposal was already placed before the SEIAA for consideration and was later withdrawn, SEAC sought explanation regarding the same from the proponent. It was clarified by the proponent that the reason for withdrawal was entirely due to the administrative reasons within their organization and not due to any technical reasons. The committee asked whether they have started any construction at the site. To this the proponent stated that only retaining walls to secure the boundary of land have been built so far. Apartments are proposed beyond CRZ-III and the maximum height of the proposed apartment is 81.45 metre. The committee had apprehensions on the construction of such a tall building near the sea located to the south west direction of project site, especially in a Panchayat area. The proponent was also reminded that upto 200 m it should be No Development Zone and only tourist cottages can be built between 200-500 m from the HTL and no house/cottages should be built in that zone. The committee was also of the opinion that the 7 m wide internal road provided is not sufficient for such a high rise building as there is some technical problem for the smooth movement of fire and rescue services since the terrain is sloping up and there is no other access roads to the project site. The yield study report on wells clearly states that the wells are having poor yield to meet the water requirement and as water is found at 22 m depth the proponent has to find some other alternate source of water to meet the demands especially for the apartments beyond the 500 m HTL. Since major portion of their land is between 200 and 500 m of HTL, the scope of

digging well is also not advisable. The proponent informed that sufficient number of recharge pits with sufficient depth is provided which shall recharge ground water and no flooding was observed so far during rainy season. SEAC also suggested rectifying the usage of 'service apartments' as mentioned in the proposal which is misleading as the proposed project is a residential apartment. The committee found that there is a 7 m cutting already taken to level the sand, between two plots of high rise building and cottage area. This may create problem to nearby plot as there are chances of land slide and hence the proponent has to provide supporting retaining walls in such places. It was also found that the present road width provided around the apartment block was insufficient for the free movement of vehicles at the rear side of the project site in case of any hazard. Moreover, putting out of fire is also risky in cases of fire accidents in such a situation. The committee suggested that 7 m wide road all around the proposed building should be provided even by modifying the podium. The present location of well near the underground sump was a matter of concern as there are chances of microbial contamination of drinking water. SEAC said that nowhere in the proposal is a first aid room facility been mentioned. Here the proponent informed that club house buildings have first aid clinics. The committee also said that they shall suggest some indigenous species for green area development. Considering all the above, the SEAC directed the proponent to submit the following:

1. Assurance that recreational open spaces of 10 percent shall be provided.
2. Building permit from Chief Town Planner with the height of the building specified.
3. Assurance that IS codes 1893-2002, 456, 13920 shall be implemented.
4. Assurance that supporting retaining walls shall be provided wherever necessary.
5. Provisions for maximizing the rain water storage.
6. Traffic circulation around the building to be specified.
7. Change the location of the underground sump which is presently located near the well.
8. Assurance that the width of access road around the apartment shall be widened by 7 m.
9. An assurance in the form of affidavit that, before securing the occupancy certificate, the project proponent shall submit an affidavit to the LSG department that whatever commitments made before the SEAC and recommendations made by the SEAC/ SEIAA shall be fully complied with and at any later stage, if found not complied with, the authorized signatory of the proponent shall be personally held responsible, should be submitted by the proponent.

The proposal has been DEFERRED and the item shall be taken for consideration after assessing the stipulations in Kerala Panchayath Building Rules with CTP regarding the maximum permissible height of the building with respect to the width of approach road and road width permissible for high rise buildings in Panchayaths.

**Item No. 05.09**      **Letter from Principal Secretary to Government, Environment Department, calling for proposals covering various issues pertaining to control of pollution arising out of high rise buildings (File No.DoECC/E3/2284/2012)**

The matter was discussed in detail among the members and the following points are being brought to the notice of the government regarding the effects and mitigation measures pertaining to pollution arising out of high rise buildings.

High-rises create microclimates by reinforcing the phenomenon of urban heat islands. High-rise buildings bring many architectural problems in addition to their own problems of indoor air quality (IAQ). Poor IAQ can have adverse health effects on residents. Regardless of source, all the pollution in a contained micro-environment has an impact on the health of those who live there. There may be potentially vertical variations in ambient air pollution concentration. In a high rise building pollution is generally greater at ground level than higher up. The variation may be experienced during different seasons. The microenvironment can be filled with things that can pollute air, including many consumer products, gas appliances, cigarettes and furniture plus a contribution from the materials that make the building and of course ourselves. Research has shown that the indoor levels of some pollutants, such as formaldehyde, chloroform and styrene can be present at levels from 2 to 50 times higher than outdoor levels. In the case of air pollution, generally, problems are always city-specific, reflecting differences in climate, topography and local sources of pollution. The danger it poses results when the emissions from vehicles, industry and domestic heating and cooking sources exceeds the natural ventilation capacity of the city.

The global importance of the problem is that the WHO has said that indoor air pollution in urban areas is responsible for about 14 times more deaths than outdoor air pollution. Indoor air pollution is estimated to be responsible for 2.8 million deaths each year, some 5.5 percent of all deaths. Most of this is almost certainly the result of particulate pollution from combustion sources. Indoor sources may lead to an accumulation of some compounds that are rarely present in the ambient air. Conversely the urban outdoor air is dominated by the VOC mixture known by the acronym BTEX (benzene, toluene, ethylbenzene, xylenes) which include major petroleum constituents. Concentrations of

combustion products in indoor air can be substantially higher than those outdoors when heating and cooking appliances are used. Specific health effects are often claimed for individual pollutants, particularly as causes of cancer from airborne carcinogens.

Health effects from exposure to the whole mixture of pollutants found indoors are often held responsible for vaguely defined syndromes or conditions such as sick building syndrome (SBS) or building related illnesses (BRI). Sick building syndrome (SBS) is the occurrence of specific symptoms with unspecified origin that are experienced by people while working or living in a particular building, but which disappear after they leave it. Symptoms include mucous membrane, skin and eye irritation, chest tightness, fatigue, headache, malaise, lethargy, lack of concentration, odour annoyance and influenza symptoms. SBS usually cannot be attributed to excessive exposure to any one contaminant or to a defective ventilation system although this is often claimed. BRI is often defined as an illness related to indoor exposures to biological and/or chemical substances (e.g. fungi, bacteria, endotoxins, mycotoxins, radon, CO, HCHO). Cooking smells in high-rise buildings which can be dispersed from a residential unit to the core can discomfort neighbours in another residential unit. Within buildings the factors that can have a negative effect on health and comfort range from chemical and biological pollutants, to occupant perceptions of specific stresses such as temperature, humidity, artificial light, noise and vibration. Microbial contamination is mostly related to the presence of humidity. The heating, ventilating and air conditioning system can also act as a pollutant source, especially when it is not properly maintained. For example, improper care of filters can lead to re-emission of particulate contaminants.

Many flats (housing projects) are facing acute water shortage. Most of the housing projects are getting water through tankers. The quality of the water is not assured. The source of rain water is not properly tapped. It is understood that many high rise buildings are not having functional STP. The PCB has issued notices to 100 hospitals in the Kochi region, including some major hospitals in the city, over the lack of adequate sewage treatment facility commensurate with their bed capacities. Not having a proper sewage treatment facility means the liquid waste generated in the flats / hospitals is getting mixed in the open drains (*The Hindu dated 4<sup>th</sup> July 2012*). In many cases there is no biogas generation plant within the project site and the biodegradable solid waste is disposed to the public system.

In Kerala scenario, usually the waste water produced from toilets, baths, showers, kitchens and so forth in community dwelling places are disposed via sewers. Since sewage facility is not available covering the entire state and most of the community dwelling places like flats

are coming up far away from the existing public sewerage system, the waste water generated is usually disposed off into open waters through channels or canals or directly to open grounds which will ultimately lead to environmental deterioration and may pose serious health hazards.

No proper solid waste treatment plants are provided in many of the high rise buildings during construction and operation phase. The wastes collected from different flats are dumped to the identified spots from where corporation lift it to the sewage treatment plants. Untreated effluents pollute ground water by infiltration. No self sustained waste treatment system is available. No biogas generation plant is available within the campus. Storm water discharge provided is also not adequate. Since most of the open area is being converted for covered car parking only limited/no open area is left for green belt development in many high rise buildings. The mushrooming of high rise buildings cause environmental deterioration as sometimes eco-sensitive areas fall in the alignment. The high density of vehicles in such dwelling places creates air and noise pollution. Moreover impact during construction activities due to generation of fugitive dust from crusher units, air emission from hot mix plants and vehicles used for transportation of materials is a matter of concern. Parking of vehicles by the residents and guests in the vicinity of the buildings create vehicular and traffic congestion. The environmental liability resulting from the construction activity is the disposal of surplus excavated earth and the debris. Extensive use of ground water without recharging blocks existing water catchments in the area. The extensive use of reflective glass also creates heat islands in and around the high rise buildings. Mushrooming of unauthorized small businesses to cater the basic local needs and requirements often has negative impact on the social life.

The following mitigation measures were suggested to solve the issue to a certain extent.

1. Keeping the surroundings, especially water and air, clean and free of pollution is the fundamental duty of every citizen. A flat with its residents representing a clustered settlement has to find adequate provisions to treat the waste in their own premises and to dispose /recycle the residue without causing harm to the environment. For this, treatment measures of solid / liquid waste have to be strictly insisted.
2. The solid waste needs careful handling by segregating them into biodegradable and non-biodegradable. Both of them need separate methods of disposal and for this the various techniques available can be used. Only thing is it has to be brought to action or else the

leachates from this can contaminate the surroundings if not attended to. The organic wastes can be subjected to composting and the products can be used as garden manure. The spread of water borne diseases which is a menace today can be controlled to a great extent by such initiatives.

3. The principle of 'polluter has to pay' must be strictly enforced.
4. The high rise buildings letting out CO<sub>2</sub> and other gases from nearby point source severely degrades the air and need to be fixed for which open space with tree cover is a must. This need to reduce the FAR which may not be feasible. The builders must be forced to do compensatory greening in the neighbourhood.
5. Reclamation of wetlands, blocking free movement of streams and altering their course, changing aquifer characteristics, for the construction of high rise buildings is a serious matter of concern and so clauses for strict penalty must be incorporated into the legal frame work.
6. The local bodies in Kerala with their urban nature should stand for strict zonation. Specific places must be allocated for developmental activities so as to allow nature to perform its duties so as to sustain life in the long run.
7. Use of reflective glass for buildings should be reduced.
8. Adequate space should be provided between two buildings to facilitate free movement of air and to avoid formation of heat islands.
9. Flats should be provided with proper functional solid and sewage waste treatment system. STP plays vital role in the process of removing the contaminants from sewage to produce liquid and solid (sludge) suitable for discharge to the environment or for reuse as water for flushing and gardening. Sludge produced during treatment is organic in nature and contain useful amounts of plant nutrients such as nitrogen, phosphorus and essential trace elements and can be utilized as a fertilizer.
10. For small residential units, a completely sealed sewage treatment system are ideal that will eliminate foul smell and methane gas generated during the process can be used to run generator to produce electric power.
11. There must be provision for adequate management of water resources.
12. Disaster management should be properly planned and provisions should be made for the smooth functioning of fire fighting and rescue operations.
13. Strict monitoring of the compliance of environmental management guidelines given by SEIAA while issuing EC.

14. Compensatory green area should be made compulsory in urban areas as part of corporate social responsibility.
15. Town and country planning should be effectively implemented.
16. Before securing the occupancy certificate, the builder shall submit an affidavit to the LSG department that whatever commitments made before the SEAC and recommendations made by the SEAC/ SEIAA shall be fully complied with and at any later stage, if found not complied with, he/she shall be personally held responsible.

In addition to the precautionary measures, proper toxicological risk assessment is also necessary for controlling the air pollution of high rise buildings.

**Item No. 05.10: Application for obtaining environmental clearance for the proposed construction of Residential Project ‘Purva Grand Bay’ at Ernakulam Village, Kanayannur Taluk, Corporation of Cochin, District Ernakulam, Kerala in Sy. Nos. 843, 2535 & 2536 by M/s Puravankara Projects Limited (File No: 19/SEIAA/KL/717/2012)**

SEAC asked clarification on the walkway provided by the proponent. The proponent explained that a walkway from Subhash Park to Goshree Bridge is nearing completion. The committee examined the documents submitted by the proponent and was found satisfactory. Hence RECOMMENDED for environmental clearance.

The meeting concluded at 4.00 pm with vote of thanks by the chair.

Chairman SEAC

Secretary SEAC