



PROCEEDINGS OF THE STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY, THIRUVANANTHAPURAM

Present

Dr. Nagesh Prabhu IFS (Rtd)
Chairman, SEIAA

Dr. V.Venu IAS
Member Secretary, SEIAA

Dr. Jayachandran. K
Member, SEIAA

Sub:SEIAA- Environmental Clearance for the proposed mining of heavy mineral sand in Neendakara (Block-22) Re-Survey Nos. 1 to 3, 21/1 to 21/6, 21/12, 22/1 to 22/6, 23/1 to 23/3, 24/1 to 24/6, 46 to 52, 92 to 101 and the sea purampoke bounding west of Neendakara Village, Block-22 containing an area of 55.53 Acres, Chavara (Block19), Re-Survey Nos. 25, 26 to 29, 33 to 37, 40 to 46, 49 to 52, 54 to 56 at Thekkumbhagam (Neendakara) and Chavara village, Karunagappally Taluk, Kollam District, Kerala State by S. Surya Kumar, Chief General Manager & Head, IREL–Granted – Orders issued.

State Environment Impact Assessment Authority, Kerala

No. 932/A1/2019/SEIAA

Dated, Thiruvananthapuram.21.04.2021

- Ref:
1. Application received on 22.03.2019 from Chief General Manager & Head, Chavara Unit, IREL (INDIA) Ltd., Chavara, Kollam, Kerala 691583
 2. Minutes of the 96th SEAC meeting held on 26th&27thApril2019.
 3. Minutes of the 97th SEAC meeting held on 21st&22ndMay 2019.
 4. Minutes of the 108th SEAC meeting held on 13th& 14thJanuary, 2020.
 5. Minutes of the 110th SEAC meeting held on 11th& 12thFebruary, 2020.
 6. Minutes of the 111th SEAC meeting held on 2nd – 4thJune, 2020.
 7. Minutes of the 114th SEAC meeting held on 6th – 8thOctober 2020.
 8. Minutes of the 115th SEAC meeting held on 3rd – 5th, November 2020
 9. Minutes of the 116th SEAC meeting held on 2nd, 3rd and 7th December, 2020
 10. Minutes of the 118th SEAC meeting held on 1st, 2nd and 3rd February, 2021
 11. Minutes of the 107th SEIAA meeting held on 18th and 19th February 2021.
 12. G.O(Rt.) No.29/2019/Env dt.12.04.2019.

ENVIRONMENTAL CLEARANCE NO.24/2021

1. Chief General Manager & Head, Chavara Unit, Authorized by the Chairman & Managing Director IREL (INDIA) Ltd., Chavara, Kollam, Kerala 691583vide his application received

on 22.03.2019 has sought Environmental Clearance under EIA Notification, 2006 for the mining of heavy mineral sand at Neendakara (Thekkumbhagam) Village, Block-22 in Re-Survey Nos. 1to3, 21/1 to 21/6, 21/12, 22/1 to 22/6, 23/1 to 23/3,24/1 to 24/6, 46 to 52,92 to 101 and the sea purampoke bounding west of Neendakara village, Block-22 containing an area of 55.53 Acres, and at Chavara Village, Block 19 in Re survey Nos.25,26 to 29,33 to 37,40 to 46,49 to 52,54 to 56 of Karunagapally Taluk, Kollam District, Kerala over an area of 62.204 Ha.

The details of the project are as follows:

1	Name of the project	Mining of Atomic Minerals, Heavy Mineral Sand along with Mineral Separation Plant in Block II at Neendakara (Thekkumbhagam), Chavara Villages in Karunagapally Taluk, Kollam, Kerala	
2	Proposed Activity	Mining of Atomic Minerals (Beach Sand Minerals), heavy mineral sand and separation of minerals namely Ilmenite, Rutile, Zircon, Sillimanite, Brown Ilmenite (Leucoxene), Monazite and production of Zirflor	
3	Name of the Sector & Schedule No.(in the EIA Notification,2006)	Non Coal mining Activity 1(a) (ii), Category B	
4	Name & Address of the project Proponent	Chief General Manager and Head (authorised by Chairman and Managing Director), IREL (India) Limited, Chavara, Kollam, Kerala 691583	
5	Project Location		
	a)Survey No.	Neendakara (Block-22) Re survey Nos. 1to3, 21/1 to 21/6, 21/12, 22/1 to 22/6, 23/1 to 23/3, 24/1 to 24/6, 46 to 52, 92 to 101 and the sea purampoke bounding west of Neendakara village, Chavara (Block19):Re survey Nos.25, 26 to 29, 33 to 37, 40 to 46, 49 to 52, 54 to 56	
	b)Revenue Village	Chavara & Neendakara	
	c)Taluk	Karunagapally	
	d)District	Kollam	
6	Geo Co-ordinates	8°58'07.9" to 08°58'18.7" N 76°31'38.3" to 76°31'53.0" E	
7	Extent (in Acre/Ha)	62.204 Ha.	
8	Project Cost	Rs. 10Crores	
9	Production details	Atomic Minerals (beach Sand Minerals) production 2,04,000 TPA by inland mining and 38000 TPA by beach washings (ROM)&Mineral production of Ilmanite, Rutile, Sillimanate, Zircon, Monazite and Zirflor in the MSP.	
10	EMP Cost	Air Pollution	20 Lakh
		Water Pollution	15 Lakh
		Eco-Restoration	30 Lakh
11	ToR Details	No.J.11015/340/2015-I.A II dated 19.12.2018	

12	CRZ Clearance Details	No.3143/A1/2018/KCZMA dated 07.12.2018	
13	Water Requirement & Source	The water required for the spiral separation in dredge and wet upgradation plant (DWUP) of 740m ³ /hr is made available from the artificial pond itself in which the DWUP floats and the water is being recycled back to pond. In Mineral Separation Plant, total process required is 1138 KLD and 835 KLD is recycled. Fresh water required is 2785 KLD.	
14	Power Requirement & Source	Kerala State Electricity Board (KSEB) for the operation of pre-concentrator – 320KW (Connected load 1750KW) – MSP. No other fuels are used for energy.	
15	Field Inspection Details	Date of field inspection on 13.12.2019	
16	Public Hearing Details	01.11.2018 at St. Sebastian Church Parish Hall, Neendakara, Kollam	
17	CSR Details	Supply of Drinking water to resettlement colonies & Mining Areas	20 Lakh
		Contribution to Mining Area Welfare Board under Chairmanship of DC	37.5 Lakh
		Financial help to Cancer patients in mining areas	10 Lakh
		Construction of Jetty for Fishing vessels in front of Fish landing centre at Vellanathuruthu	20 Lakh
		Construction of smart class room at Pandarathuruthu Govt. LPS	4.5 Lakh
		Construction of Toilet block 3 Nos. for two Anganavadees at Karithura and Puthenthura	3 Lakh
		Erecting High mast light at ASHS Jn. Puthenthura	4 Lakh
		Providing financial assistance for the operation of Jhankar service at Karithura	2 Lakh
		Education kit for school students at Pandarathuruthu, Kovilthottam, Karithura and Puthenthura Schools	2 Lakh
		Medical camps at Mining areas	2 Lakh
18	Green belt Development Area	Total area of green belt	0.297
		No. of plants	40 per Acre
		Funds allocated	15 Lakhs
19	Validity of EC	As per the Approved mining plan	

2. The proposal was placed in the 118th meeting of SEAC held on 1st – 3rd February, 2021. The Committee scrutinized the application and all the additional details submitted by the proponent and field inspection report of Sub-Committee. The Committee decided to recommend the issuance of EC subject to the following specific conditions:

- i. *All the measures proposed in the environmental management plan should be implemented scrupulously.*

- ii. *Groundwater recharge structures should be constructed in the rehabilitated mining area.*
 - iii. *Rainwater harvesting structures should be in all the houses and plots provided as part of resettlement & rehabilitation plan*
 - iv. *Sworn affidavit stating that mining will be done only from the two areas which are not in contiguity*
3. **Based on the recommendation of SEAC, Authority in its 107th meeting held on 18th & 19th February 2021, decided to issue Environmental Clearance for the quantity provided in the mining plan, approved by Atomic Minerals Directorate for Exploration and Research (AMDER), Department of Atomic Energy, GOI. The period of EC shall be till the validity of approved mining plan subject to following conditions.**
- i. *The monitoring of changes in shoreline along the coast, particularly the shores adjacent to the mining sites, shall be carried out by NCESS once in two years and report shall be submitted to the Regional office of MoEF&CC, Bangalore.*
 - ii. *No Groundwater shall be extracted in the CRZ areas to meet the water requirements of the project.*
 - iii. *As per the Ministry's Office Memorandum F.No.22-65/2017-IA.III dated 1st May, 2018, 2% of project Cost shall be earmarked under Corporate Environment Responsibility (CER) for the activities such as support to local government, schools, sanitation and health including construction of public toilets in the surrounding villages, as per need based assessment carried out. The activities proposed under CER shall be restricted to the affected area around the project. The monitoring report shall be submitted to the regional office as a part of half yearly compliance report and to the District Collector. It should be posted on the website of the project proponent.*
 - iv. *It is noticed that in this project both inland and shore mining will be carried out and a part of the project area falls in CRZ I. As per section 3(X) of Coastal Regulation Zone (CRZ) notification 2011 mining by IREL is an exempted activity and as per clause 4.2 (iii) SEIAA can issue EC on the recommendation of concerned CZMA. As per letter dated 7.12.2018 KCZMA has recommended the proposal of IREL. **However as IREL is involved in mining rare mineral with radioactive properties, it is the responsibility of the Project Proponent to get all the other required clearances from MoEF&CC/KCZMA/other relevant agencies wherever required before the commencement of mining operations.***

- v. *E C is subject to the final decision in OA 76/2019 of Hon'ble National Green Tribunal, (NGT) New Delhi & cases pending in Hon'ble High court of Kerala.*
- vi. *Mining operations have to be carried out as per the approved mining plan and directions contained in the letter dated 17th September 2019 of Department of Atomic Energy, GOI, approving the Mining plan for NK Block No II & IV, for the period from FY 2019-20 to 2023-24.*
- vii. *Lease agreement with Government of Kerala for mining in Block II has expired. Projectproponent has informed SEIAA that as per clause 6(11) of AMCR 2016, the lease holder is eligible for deemed extension of lease until entire reserve is exhausted. However taking enough precaution, Project proponent is directed to execute the valid lease deed with Govt. of Kerala. **The Project Proponent will commence mining only after execution of valid lease deed with Govt. of Kerala.***
- viii. *The Project Proponent shall follow the guidelines of Govt.of India and Govt. of Kerala for sustainable mining and also to address the grievances of local inhabitants.*
- ix. *Government of Kerala have instituted a study through NCESS to ensure sustainable mining leading to Social and Ecological security of project region. **The project proponent shall follow the recommendation of NCESS in mining operations.** This was also insisted in the letter dated 16th June 2020 of MoEF&CC addressed to SEIAA.*
- x. *In response to the direction given by NGT in OA 76/2019, a Joint committee constituted by NGT has submitted a report to NGT on 2nd November 2019. In this report the committee has made some valuable suggestion for sustainable mining by IREL. The project Proponent shall explore the possibilities of implementing those suggestions in the best interest of sustainable mining.*
- xi. *In response to the direction of Hon'ble National Green Tribunal, (NGT) New Delhi, in OA 76/2019, a Joint Committee appointed by NGT under the leadership of Kerala State Pollution Control Board, has submitted a report to NGT about the alleged irregularities committed by IREL from 2001 to 2019 in which interim damage assessment and compensation for temporary restoration activities towards environmental damage caused was estimated at 69.12 Crore and the compensation for the excess quantity of mining over and above the permissible quantity was Rs 223.81 Crore. The case is pending before the Honourable NGT for further*

adjudication and for realization of above estimated compensation. **In the best interest of the Country, State and IREL, the Project Proponent shall take all precautions while mining so that such a situation will not arise in future.**

- xii. **Groundwater recharge and rainwater harvesting structures should be provided in the rehabilitated mined areas, covering all the houses and plots, included in the resettlement & rehabilitation plan.**
- xiii. *As a part of Appraisal of the Project, to address all the material Environmental and Social concerns in the project Region, a Public Hearing was also conducted by Kerala state Pollution Control Board on 01.11.2018. An EIA report has also been prepared to address these concerns expressed during public consultation. **Project proponent shall implement activities proposed in the EIA report and Environment management Plan to ensure the social and ecological security in the project region. SEAC shall conduct regular field inspections to monitor the implementation activities mentioned in EIA report.***
- xiv. *Authority decided to mark a copy of the EC to Department of Atomic energy GOI, the agency which has approved the mining plan, MoEF&CC and MoEF&CC Regional Office at Bangalore and DC Kollam for information and necessary further action.*
- xv. *The Project Proponent shall submit half yearly compliance report to SEIAA and Regional Office, MoEF&CC Bangalore*
- xvi. *As this is a special project of ecological, economic, social and scientific importance, Authority decided to constitute a Monitoring committee to monitor the EC conditions under the Chairmanship Chief General Manager & Head IREL. One of the expert members of SEAC nominated by Chairman SEAC shall be a member of the committee. The District Geologist, a senior scientist from NCESS who is involved in preparation of the report and a representative from local NGO nominated by DC Kollam, shall be the members of the committee. The committee will meet once in 3 months and monitor the implementation of EC conditions and prepare an inspection report for the compliance EC conditions. The Chief General Manager & Head IREL shall be the convener of the meeting and IREL shall provide all logistic support for conduct of meeting and field inspection.*

4. Environmental Clearance as per the EIA Notification 2006 is hereby accorded for the mining of Heavy Mineral Sand and Atomic Mineral project of Chief General Manager & Head, Chavara Unit, IREL (INDIA) Ltd., Chavara, Kollam, Kerala 691583 at Neendakara Village, Block-22 in Re-Survey Nos. 1 to 3, 21/1 to 21/6, 21/12, 22/1 to 22/6, 23/1 to 23/3, 24/1 to 24/6, 46 to 52, 92 to 101 and the sea purampoke bounding west of Neendakara Village, Block-22 containing an area of 55.53 Acres and at Chavara Village, Block19 in Re-Survey Nos. 25, 26 to 29, 33 to 37, 40 to 46, 49 to 52, 54 to 56 of Karunagappally Taluk, Kollam District, Kerala over an area of 62.024 Ha for the quantity mentioned in the approved mining plan. The period of EC shall be till the validity of approved mining plan subject to the specific conditions in Para3 above, and all the environmental impact mitigation and management measures undertaken by the project proponent in the Form I, EMP, PFR and Mining plan submitted to SEIAA. The assurances and clarifications given by the proponent will be deemed to be a part of these proceedings as if incorporated herein.
5. The Clearance issued will also be subject to full and effective implementation of all the undertakings specified in the Application Form, mitigation measures as assured in the Environment Management Plan and the mining features including progressive mine closure plan as submitted with the application and relied on for grant of this clearance. The above undertakings and the conditions and the undertakings given for Mining, Blasting, Mines Drainage, Stacking of Mineral Rejects and Disposal of Waste, Environment Management Plan & Progressive Mine Closure Plan of the Mining Plan as submitted will be deemed to be part of this proceedings as conditions as undertaken by the proponent, as if incorporated herein.
6. Validity of the Environmental Clearance will be till the validity of approved mining plan subject to inspection by SEAC on annual basis and compliance of the EC conditions and genuine complaints from residents within the security area of the quarry.
7. Compliance of the conditions herein will be monitored by the State Environment Impact Assessment Authority or its authorised offices and also by the Regional Office of the Ministry of Environment, Forest & Climate Change, Govt. of India, Bangalore. Necessary assistance for entry and inspection should be provided by the project proponent and those who are engaged or entrusted by him to the staff for inspection or monitoring.
8. Instances of violation if any shall be reported to the District Collector, Kollam.
9. The Half Yearly Compliance Report (HYCRs) with its contents, covering letter, compliance report and environmental monitoring data has to be submitted in PDF format

merged into a single document. The email should clearly mention the name of the project, EC No and date, period of submission and be sent to the Regional Office of MoEF&CC by email only at rosz.bng-mefcc@gov.in. Hardcopy of HYCRs shall not be acceptable.

10. The given address for correspondence with the authorised signatory of the project is Chief General Manager & Head, Chavara Unit, authorized by the Chairman & Managing Director, IREL (INDIA) Ltd., Chavara, Kollam, Kerala 691583.



Anil.P.Antony
Administrator, SEIAA
For Member Secretary, SEIAA

To,

Chief General Manager & Head
Authorized by the Chairman & Managing Director
Chavara Unit, IREL (INDIA) Ltd.
Chavara, Kollam
Kerala 691583

Copy to,

1. MoEF Regional Office, Southern Zone, KendriyaSadana, 4th Floor, E&F Wing, II Block, Koramangala, Bangalore-560034.(through e-mail: rosz.bng-mefcc@gov.in)
2. The Principal Secretary to Government, Environment Department, Government of Kerala
3. The Director, Directorate of Environment & Climate Change, 4th Floor KSRTC Bus Terminal, Thampanoor, Thiruvananthapuram, Kerala 695001.
4. The District Collector, Kollam
5. The Director, Mining & Geology, Thiruvananthapuram -4.
6. The Member Secretary, Kerala State Pollution Control Board
7. The District Geologist, Kollam District
8. The Tahsildhar, Karunagapally Taluk, Kollam District
9. The Secretary, Belur Grama Panchayat, Kollam District
10. The Chairman, SEIAA.
11. Website.
12. S/f
13. O/c



**STATE ENVIRONMENT IMPACT ASSESSMENT AUTHORITY (SEIAA),
KERALA**

GENERAL CONDITIONS

1. 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.
2. The project proponent should advertise in at least two local newspapers widely circulated in the region, one of which shall be in the vernacular language informing that the project has been accorded Environmental Clearance and copies of clearance letters are available on the website of SEIAA www.seiaakerala.in. 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.
3. The proponent shall send a copy of the clearance letter to the concerned Grama Panchayath/District Panchayath/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 uploaded on the website of the company.
4. 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.
5. Consent to Establish and Consent to Operate from Kerala State Pollution Control Board under Water and Air Act(s) should be obtained before initiating activity. 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. Copies of statutory clearance obtained shall be enclosed along with first half yearly compliance report.
6. If blasting is involved in the preparation of site, the required clearances from the competent authorities should be obtained.
7. The stipulations/conditions issued 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, Solid Waste Management Rules, 2016 Plastic Waste Management and Handling Rules, 2016, Construction and Demolition Waste Management Rules 2016, the Public Liability (Insurance) Act, 1991 and EIA Notification, 2006.

8. The conditions specified in the EIA notifications 2006 and subsequent amendments, the specific directions given by SEIAA/SEAC should be followed under corporate Environment Responsibility. The activities carried out under CER should be listed with details in Half yearly compliance report along with Status of Implementation and certificates from the beneficiaries and photographs.
9. Safety measures should be implemented as per the Fire and Safety Regulations/SDMA guidelines.
10. The environmental safeguards contained in the EIA Report should be implemented in letter and spirit and status of implementation of each one should be included in the half yearly compliance Report.
11. Environment Monitoring Committee as agreed under the affidavit filed by the proponent should be formed and made functional. Environmental Monitoring Committee with defined functions and responsibility should foresee post operational environmental problems (Eg. 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.) and action taken to solve these immediately with mitigation measures
12. Suitable avenue trees should be planted on either side of approach road and internal roads and open parking areas, if any. The proponent should plant trees at least 5 times of the loss of trees that has occurred while clearing the land for the project. The native flowering and fruiting species only shall be used for planting and planning should be done considering the nature of public use.
13. 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 power grid and consumption in future.
14. The proponent shall submit half yearly compliance 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 same on their website and shall update the same periodically. The

compliance report shall be simultaneously sent to the Regional Office of Ministry of Environment, Forests and Climate Change, Govt. of India at Bengaluru and also to SEIAA.

15. The project proponent is responsible for implementing all the provisions of labour laws applicable from time to time. Provision should be made for providing cooking facilities and supply of kerosene or cooking gas to the labourers.
16. The proponent shall co-operate with and provide facilities and documents/data to the Agencies including the Officials from the Regional of Ministry of Environment, Forests and Climate Change, Bengaluru during their inspection as part of monitoring the implementation of environmental safeguards.
17. In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Authority.
18. In case of transfer of EC, the matter shall be intimated and approval from the Authority shall be obtained as per the existing norms.
19. 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.
20. 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.
21. Any appeal against this Environmental Clearance shall lie with the National Green Tribunal 1, if preferred, within a period of 30 days as prescribed under section 11 of the National Green Tribunal Act, 1997.

General Conditions specific to Construction Phase

1. All statutory permissions including "Consent for Establishment" to STP/ETP, Solid waste management plant, Power Generator etc shall be obtained from Kerala State Pollution Control Board under Air Act and Water Act and Environment (Protection) Act. A copy shall be submitted to the Ministry/SEIAA before start of any construction work at the site.
2. 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 lightning etc. Building constructed in the

runout area of landslide / rock fall area, shall be provided with suitable structures/ measures to prevent earth materials to hit the structure.

3. All required sanitary and hygienic measures should be in place before starting construction activities which are to be maintained throughout the construction phase.
4. A First Aid Room shall be provided at the project site both during construction and operation phases of the project.
5. Provide safe and healthy basic facilities for construction workers as per the Building & Other Construction Workers (Regulation of Employment and Conditions of Service) Act, 1996
6. Adequate drinking water and sanitary facilities should be provided for construction workers at the site, Provision should be made for mobile toilets. Safe disposal of wastewater and solid wastes generated including piling debris during the construction phase should be ensured.
7. Unless provided otherwise, all the topsoil excavated during construction phase should be stored and re-used for backfilling/ horticulture/landscaping purposes within the project site.
8. Top soil excavated should not be used for reclaiming wetlands.
9. The muck shall be disposed of only at approved sites with the approval of competent authority. The disposal should not create any adverse effect on the neighbouring communities and should be disposed taking necessary precautions for general safety and health of the public. Proof regarding the same shall be enclosed with the respective six monthly compliance reports.
10. Construction spoils, including bituminous material and other hazardous materials, must not be allowed to contaminate watercourses and the dump sites for such materials must be secured so that they will not leach into the ground water.
11. Any hazardous waste generated during construction phase, should be disposed off to authorised/approved Waste Collectors as per applicable rules and norms with necessary approval of the Kerala State Pollution Control Board.
12. Soil and ground water samples shall be tested to ascertain that there is no threat to ground water quality by leaching of heavy metals and other toxic contaminants.
13. Storm water control and its re-use measures as per CGWB and BIS standards shall be followed for various applications.
14. 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. During the transportation of building materials/products, the vehicles shall be covered with suitable materials to prevent dust pollution.

15. 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 taken to reduce ambient air and noise level during construction phase, so as to conform to the stipulated standards by CPCB/KSPCB.
16. The diesel generator sets used during construction phase should be of low sulphur diesel type and should conform to Environment (Protection) Rules prescribed for air and noise emission standards. 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. DG sets shall be installed and made functional as per guidelines of KSPCB.
17. Ready mixed concrete must be used in building construction. Water demand during construction should be reduced by use of pre-mixed concrete, curing agents and other best practices referred.
18. Permission to draw ground water shall be obtained from the competent Authority prior to construction/operation of the project.
19. Separate dual plumbing line should be provided; one line for Toilet Flushing / Gardening / Vehicle wash and another separate line for other domestic uses, for ensuring reuse / recycle of treated waste water to the maximum extent possible.
20. Separation of grey and black water should be done by the use of dual plumbing line for separation of grey and black water.
21. 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.
22. Water efficient plumbing features should be adopted
23. Use of glass may be reduced by 40% to reduce the electricity consumption and load on air conditioning. If necessary, use high quality double glass with special reflective coating on windows.
24. Design of the building should be in compliance to Energy Building Code as applicable

25. Roof should meet perspective requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill the requirement.
26. Opaque wall should meet perspective requirement as per energy Conservation Building Code which is proposed to be mandatory for all air conditioned spaces while it is optional for non-airconditioned spaces by use of appropriate thermal insulation material to fulfill requirement
27. Climate responsive design as per Green Building Guidelines in practice should be adopted
28. Building design should cater to the differently-abled citizens
29. Vegetation should be adopted appropriately on the ground as well as over built structure such as roofs, basements, podiums etc.
30. Exposed roof area and covered parking should be covered with material having high solar reflective index
31. Regular supervision of the above and other measures should be in place all throughout the construction phase, so as to avoid disturbance to the surroundings.
32. 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. (Applicable to Power Stations).
33. Under the provisions of Environment (Protection) Act, 1986, legal action shall be initiated against the project proponent if it was found that construction of the project has been started without obtaining the statutory clearances.

General Conditions specific to operation phase

1. The buildings should have adequate distance between them to allow movement of fresh air and passage of natural light and ventilation.
2. Sewage Treatment Plant (STP) should be installed and made functional as per KSPCB guidelines. On/site Treatment of Sewage and Sullage should be done with scientific method ,ensuring efficiency of treatment, ease in operation , sustainability and it should contain the units of primary, secondary, tertiary and quaternary type of treatment scheme. The installation of the STP should be certified by an independent expert and a report in this regard should be submitted to the Ministry/SEIAA before the project is commissioned for operation. Treated effluent emanating from STP shall be recycled / reused to the maximum extent possible. Treatment of 100% grey water shall be done through a decentralized treatment. Reuse of water shall be practiced for flushing process and garden purposes. Discharge of

unused treated effluent shall conform to the norms and standards of the Kerala State Pollution Control Board. Necessary measures should be taken to mitigate the odour problem from STP.

3. Solid waste management plant shall be installed and made functional as per the guidelines of KSPCB. 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. Adequate measures should be taken to prevent odour problem from solid waste processing plant and STP.
4. Provide adequate Material Collection Facility (MCF) for storage of non-biodegradable waste including plastic waste and E waste, for handing over the same to Recyclers/ Local Body , as stipulated by Kerala State Pollution Control Board.
5. 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.
6. Low sulphur diesel shall be used as fuel in DG sets. The location of the DG sets may be decided in consultation with Kerala State pollution Control Board. DG sets should not be housed in sub basement levels.
7. 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.
8. The green belt of adequate width and density shall be raised preferably with local species along the periphery of the project site so as to provide protection against particulate matter and noise.
9. Weep holes shall be provided in the compound walls to ensure natural drainage of rain water during the monsoon period.
10. Rain Water Harvesting structures should be installed as per the prevailing provisions of KMBR/KPBR, unless otherwise specified elsewhere. Rain water harvesting measures for roof run-off and surface run-off, as per approved building plan 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 m above the highest ground water table.

11. The ground water level and its quality should be monitored regularly in consultation with State Groundwater Department/Central Ground Water Authority.
 12. Traffic congestion near the entry and exit points from the roads adjoining the project site must be avoided. Parking should be fully internalized and no public space should be utilized.
 13. A Report on the energy conservation measures, conforming to energy conservation norms issued 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.
 14. Energy conservation measures like installation of LED /CFLs/TFLs for the lighting the areas outside the building should be an integral part of the project design and should be in place before project commissioning. Used LED/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. Solar panels may be used to the extent possible.
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