



आई आर ई एल (इंडिया) लिमिटेड  
**IREL (India) Limited**  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Govt. of India undertaking)



CIN : U15100MH1950GOI008187 Website : www.irel.co.in

ISO 9001:2015 & ISO 14001:2015 & ISO 45001:2018 Company

CH/MNG/62.204 Ha/2023  
29.05.2023

The Administrator,  
State Environmental Impact Assessment Authority, Kerala.  
KSRTC Bus Terminal Complex, 4<sup>th</sup> Floor.  
Thampanoor.  
Thirvanathapuram -695001

Sir/Madam,

Sub: Submission of Half yearly Compliance Report to MoEF & CC Environment clearance of our mining lease of NK Block II having an area of 62.204 Ha in Chavara & Neendakara Villages, Karunagapally Taluk, Kollam district – reg.

Ref: SEIAA, Kerala letter No. 932/A1/2019/SEIAA dated 21.04.2021

As per the letter referred above, from SEIAA, Kerala conveying the composite Environmental and CRZ clearance for beach sand mining in 62.204 Ha area in the above villages, we are submitting herewith the Half yearly report for the 1<sup>st</sup> Half of 2023.

Regards.

Yours faithfully,  
For IREL (India) Limited, Chavara

  
R.V. Viswanath  
General Manager & Head

Copy to Regional Office, MoEF&CC, Bengaluru

आई आर ई एल (इंडिया) लिमिटेड, चवरा, कोल्लम, केरल राज्य, भारत-691 583  
IREL (India) Limited, Chavara, Kollam, Kerala State, India-691 583  
फोन / Tel. : 0476-2680701 - 5 फेक्स / Fax :0476-2680141

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# Half yearly Monitoring Report for the period October 2022 to March 2023

## Introduction:

IREL (India) Limited (Formerly Indian Rare Earths Limited), a Government of India undertaking under the Department of Atomic Energy has been engaged in the mining and beneficiation of the heavy minerals from the chavara deposit in Kollam district of Kerala state. IREL has been granted mining lease to collect heavy mineral sand from the area vide G.O.(Ms) 22/2005/ID dated 22.02.2005 & G.O.(MS) no. 32/2006/ID dated 15.03.2006 and further extended vide GO MS .No 47/2022/ID dated 06.06.2022 by the Government of Kerala and IREL obtained Environmental and CRZ clearance vide 932/A1/2019/SEIAA dated 21.04.2021, from SEIAA, Kerala for beach sand mining in 62.204 Ha area in the villages of Chavara and Thekkumbhagom (Neendakara) for the production of ROM up to 2,00,000 tons per annum from Inland deposits and 20,000 tonnes per annum from replensibile deposits. The Environmental Management Cell is functioning and conducted regular review meetings under the chairmanship of Shri R.V.Viswanath, General Manager & Unit Head for monitoring the environmental activities of the project.

**Environmental Policy of IREL:** IREL, Chavara is an ISO certified company for Quality and Environment Management and Occupational Health & Safety Management System. Our integrated Management System policy is as follows:

We, at IREL, Chavara are committed to sustain our growth in the supply of beach sand minerals & mineral products through:

1. Satisfy applicable requirements.
2. Protection of Environment (including prevention of pollution).
3. Provide safe and healthy working conditions for prevention of work related injury and ill health.
4. Fulfill compliance obligations related to products & services, environment and occupational health & safety.
5. Conservation and protection of natural resources.
6. Eliminate hazards and reduce OH & Risks.
7. Prevention of incidents & ill health.
8. Consultation and Participation of workers.

 29/5/23



**Location:** The project area lies between 08°57'38.25"N to 76°31'50.97"E and 9°02'14.90"N to 76°30'31.11"E (Toposheet No 58 C/ 12). The NH is in very near proximity to the plot. The nearest railway station is Kollam at a distance of about 12 km. M/s Kerala Minerals and Metals Ltd (KMML), a state government undertaking engaged in beach sand mining, beneficiation and pigment production & M/s IREL are the only two major industries in this area.

### STATUS OF COMPLAINE OF EC CONDITIONS

#### Specific Condition

Clause	EC conditions	Compliances
1	The monitoring of changes in shore line along the chavara coast (particularly the shore adjacent to mining site) shall be carried out by NCESS once in two years and report shall be submitted to the regional office of MoEF&CC, Bangalore.	NCESS has informed us that presently they are not taking up the shoreline study work. In the meantime it has come to our notice that Coastal Engineering division is monitoring the shoreline and we have requested them to provide us the data.
2	No Groundwater shall be extracted in the CRZ areas to meet the water requirements of project.	No ground water is extracted in the CRZ areas to meet the water requirement of the project.
3	As per the Ministry's office memorandum F No 22-65/2017 -IA .III dated 1 <sup>st</sup> May 2018, 2% of the project cost shall be earmarked under Corporate Environmental Responsibility (CER) for the activities such as support to local government, schools, sanitations and health including construction of public toilet in the surrounding villages.as per the 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 the half yearly compliance report and to District Collector. It should be posted on website of the project proponent.	Rs. 13.07 lakhs have been spent till date under Corporate Environmental Responsibility (CER) in the affected area.
4	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	Mining activities are carried out with relevant clearances from MoEF&CC/KCZMA.

 27/5/23



	(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 date 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	
5	EC is subject to the final decision in OA 76/2019 of Hon'ble National Green Tribunal (NGT), New Delhi.	Noted.
6	Mining operations have to carried out as per the approved mining plan and directions contained in the letter dated 17 th September 2019 of Department of Atomic Energy, GOI, approving the mining plan for NK Block no II from 201'9-20 to 23-24.	Mining operations are carried out as per the approved mining plan.
7	Lease agreement with Govt. of Kerala for mining in Block II has expired in Feb 2020. Project proponent has informed SEIAA that as per clause 6(11) of AMCR, 2016, the lease holder is eligible for deemed extension of lease until entire reserves are exhausted. However taking enough precautions, Project proponent is directed to execute the lease deed with the Govt. Of Kerala. The project proponent will commence mining only after execution of valid lease deed with Govt. of Kerala.	In the process of executing the lease deed, we are awaiting response from the State Government for fixing the stamp duty charges.
8	The project proponent shall follow the Guideline of Govt. of India and Govt. of Kerala for sustainable mining and also to address the grievances of local inhabitants.	Guidelines of Govt. of India and Govt. of Kerala are followed for sustainable mining. Genuine grievances of local inhabitants are also addressed.
9	Government of Kerala has instituted a study through NCESS to ensure sustainable mining leading to Social and Ecological security of project	Recommendations of NCESS are followed for sustainable mining.

 29/5/22

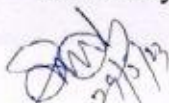


	region. The project proponent shall follow the recommendation of NCESS in mining operations. This was also insisted in the letter dated 16th June 2020 of MoEF&CC addressed to SEIAA.	
10	In response to the direction given by NGT in OA 76/2019, the report of the joint committee submitted on 02.11.2019 constituted by NGT. In this report the committee has made some suggestions for sustainable mining by IREL. The project proponent shall explore the possibilities of implementing suggestions in the best interest of sustainable mining	The suggestions made by Joint Committee are implemented in the possible way in the interest of sustainable mining.
11	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 69.12Crore and the compensation for the excess quantity of mining over and above the permissible Quantity was Rs223.81Crore. The case is pending before the honorable 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.	IREL will ensure sustainable mining in the project area and implement necessary precautions to prevent similar situation in future.
12	Grounds water recharge and rainwater harvesting structures should be provided in the rehabilitated mined areas, covering all the houses and plots. Included in	Ground water recharge and rainwater harvesting structures are provided by land owners in the rehabilitated houses in mined out areas as per town planner





	the resettlement & rehabilitation plan.	approval.
13	As a part of appraisal of the project, to address all the material environment 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 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	Activities proposed in the EIA and EMP report are implemented. Rs.16.97 lakhs spent towards coastal protection work during this period.
14	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 Bengaluru, Regional office, MOEF & CC, Bengaluru.	Noted.
15	The Project proponent shall submit half yearly compliance report to SEIAA and Regional office, MoEF-&CC Bengaluru.	Half yearly compliance report is submitted to SEIAA and Regional Office, MOEF & CC Bengaluru.
16	As this is a Special project of Ecological, Economic, Social and Scientific importance, Authority decided to constitute a committee to monitor the EC conditions under the Chairmanship one of expert members of SEAC nominated by Chairman SEAC. The District Geologist, a responsible senior officer from IREL, 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	Monitoring committee will be constituted with consisting of one of the expert member of SEAC nominated by Chairman, SEAC involving District Geologist, Senior officer from IREL, Senior Scientist from NCESS Local representative nominated by DC, Kollam to monitor the EC conditions. Requested DC, Kollam to nominate a Local Representative and the response is awaited.





	representative from IREL shall be the convener of the meeting and IREL shall provide all logistic support for Conduct of meeting and field inspection.	
17	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, Block 19 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.	Noted.
18	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	Noted.



	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.	
19	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.	Noted.
20	Compliance of the conditions herein will be monitored by the State Environment Impact Assessment Authority or its authorized offices and also by the Regional Office of the Ministry of Environment, Forest & Climate Change. Govt. of India, Bengaluru. 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.	IREL extends full cooperation to the MoEF & CC officers and SEIAA officers by furnishing the requisite information / monitoring reports during their inspections.
21	Instances of violation if any shall be Reported to the District Collector. Kollam.	Noted.
22	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 e- mail 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 email ID ros.z.bng mecfcc@gov.in. Hard copy of HYCRs shall not be	Half yearly reports are submitted regularly as per the required format.





acceptable	
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**General Conditions:**

Clause	EC conditions	Compliances
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	Complied.
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 <a href="http://www.seiaakerala.in">www.seiaakerala.in</a> . 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	Complied.
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.	Complied.
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.	Displayed.
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	Consent to operate from Kerala State Pollution Control Board under Water and Air Act(s) is obtained.





	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.	No blasting is involved in our project.
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	The stipulations/ conditions issued by statutory authorities under different Acts and Notifications are complied.
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.	The stipulated conditions as per EIA notification, 2006, the specific direction given by the SEIAA/SEAC are followed under CER.
9	Safety measures should be implemented as per the fire and safety Regulations/SDMA guidelines.	Safety measures are 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.	The environmental safeguards contains in the EIA Report are being implemented.
11	Environment Monitoring Committee as agreed under the affidavit filed by	Environmental Management Cell is functioning and conducts



	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.	regular review meetings under the chairmanship of Shri. R.V.Viswanath, General Manager & Unit Head.
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.	Plantations are being done in the mined out area.
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.	The possibility of incorporating devices for solar energy generation and utilization in mining areas is under consideration and work will be taken up during financial period 2023-24.
14	The proponent shall submit half yearly compliance reports on the status 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	Half yearly reports are submitted regularly as per the required format.
15	The project proponent is responsible for implementing all the provisions of labour laws applicable from time	The relevant provisions of labor laws applicable from time to time are followed.





	to time. Provision should be made for providing 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.	IREL extends support to the officials 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.	Noted.
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.	Noted.
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.	Noted.
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.	Noted.
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.	Noted.

 29/07/23



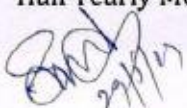
**General Conditions specific to Construction Phase.**

Clause	EC conditions	Compliances
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.	Mining operations are carried out with required statutory permissions and clearances.
2	The approval of the competent authority shall be obtained for structural safety of the buildings due to earthquake, adequacy of firefighting equipment's, etc. as per National Building Code including protection measures from lightning etc. Building constructed in the run out area of landslide / rock fall area, shall be provided with suitable structures/ measures to prevent earth materials to hit the structure.	Mining operations are carried out with required statutory permissions and clearances.
3	All required sanitary and hygienic measures should be in place before starting construction activities which are to be maintained throughout the construction phase.	Noted.
4	A First Aid Room shall be provided at the project site both during construction and operation phases of the project.	A full time dispensary is located inside the project area.
5	Provide safe and health basic facilities for construction workers as per the Building and Other Construction Workers ( Regulation of Employment and Condition of Service) Act,1996	Noted.
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 please should be ensured.	Noted.






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	The top soil also contains the minerals; hence they are excavated and transported to plant for separation.
8	Top soil excavated should not be used for reclaiming wetlands.	The top soil also contains the minerals hence they are excavated and transported to plant for separation
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 neighboring 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.	No construction activities are involved in this project.
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.	No construction activities are involved in this project.
11	Any hazardous waste generated during construction phase, should be disposed off to authorized/approved. Waste collectors as per applicable rules and norms with necessary approval of the Kerala state pollution control board.	No construction activities are involved in this project.
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.	Leaching of heavy metals and other toxic contaminants are not involved in this project, however ground water samples are tested and report is enclosed as Annexure.
13	Storm water control and its re-use measures as per CGWB and BIS standards shall be followed for various applications.	Not applicable.
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	No construction activities are involved in this project.

 29/1/23



	standards and should be operated only during non-peak hours. During the transportation of building materials/product, 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 load 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.	Noise levels are monitored and are within the limits.
16	The diesel generator sets used during construction phase should be of low sulphur diesel type and should conform of 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.	No construction activities are involved in this project.
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.	No construction activities are involved in this project.
18	Permission to draw ground water shall be obtained from the competent Authority prior to construction/operation of the project.	No ground water is drawn for this 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.	No construction activities are involved in this project.
20	Separate of grey and black water should be done by the use of dual plumbing line for separate grey and	No, construction activities are involved in this project.

  
21/11/23



	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.	No construction activities are involved in this project.
22	Water efficient plumbing features should be adopted.	No construction activities are involved in this project.
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 window.	No construction activities are involved in this project.
24	Design of the building should be in compliance to Energy Building Code as applicable.	No construction activities are involved in this project.
25	Roof should meet perspective requirement as per Energy Conservation Building Code by using appropriate thermal insulation material to fulfill the requirement.	No construction activities are involved in this project.
26	Opaque wall should meet perspective requirement as per Energy Construction Building Code which is proposed to be mandatory for all air conditioned spaces while it is optional for non-air-conditioned spaces by use of appropriate thermal insulation material to fulfill requirement.	No construction activities are involved in this project.
27	Climate responsive design as per Green Building Guidelines in practice should be adopted.	No construction activities are involved in this project.
28	Building design should cater to the differently-abled citizens.	No construction activities are involved in this project.
29	Vegetation should be adopted appropriately on the ground as well as over built structure such as roofs, basements, podiums etc.	No construction activities are involved in this project.
30	Exposed roof area and covered parking should be covered with material having high solar reflective index.	No construction activities are involved in this project.
31	Regular supervision of the above and other measures should be in place all throughout the construction phase, so as to avoid disturbance to	No construction activities are involved in this project.

 29/1/23



	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 27 <sup>th</sup> August 2003. (Applicable to Power Stations).	No construction activities are involved in this project.
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 clearance.	No construction activities are involved in this project.

### General Conditions specific to Construction Phase.

Clause	EC conditions	Compliances
1	The buildings should have adequate distance them to allow movement of the fresh air and passage of natural light and ventilation.	Adequate distances are maintained.
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	Not applicable.

 29/1/23



	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.	In practice.
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.	In practice.
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.	Diesel power generators are not used in our mining project.
6	Low sulphur diesel shall be used as fuel in DG sets. The location of the DG sets should not be decided in consultation with Kerala State Pollution Control Board. DG sets should not be housed in sub-basement levels.	DG sets are not used in mining areas.
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	Noise levels are monitored and are within limits.

 29/07/23



	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.	Plantations are provided in mined outland refilled area.
9	Weep holes shall be provided in the compound walls to ensure natural drainage of rain water during the monsoon period.	It is maintained.
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 pre-treatment must be done to remove suspended matter, oil and grease. The bore-well for rainwater recharging should be kept at least 5 m above the highest ground water table.	Noted.
11	The ground water level and its quality should be monitored regularly in consultation with State Ground water Department/central Ground Water Authority.	Water samples are collected and are being made, and the reports are attached as annexure.
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.	In practice.
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 and technology; R & U factors etc and submit to the Ministry in three months' time.	Noted.
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.	Energy conservation measures are implemented.

 24/1/23



Used LEC/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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### Study on Ground Water & Ambient Air Monitoring:

We have conducted ambient air monitoring and ground water analysis of the samples from the open wells in the mining area and nearby areas during the period from October 2022 to March 2023. The analysis of the samples were done through M/s Standards Environmental & Analytical Laboratories, Udyogamandal, Emakulam, an NABL accredited laboratory. The results are consolidated below:

#### Ambient Air Monitoring:

Parameters	KSPCB limit	132 site office	Near Karithura Church	Near Plant no.1 Jetty
Particulate Matter PM10 (ug/m <sup>3</sup> )	100	92.5	72.8	88.8
Particulate Matter PM2.5 (ug/m <sup>3</sup> )	60	47.1	37.5	46.3
Sulphur Dioxide (ug/m <sup>3</sup> )	80	<4.00	<4.00	<4.00
Nitrogen Dioxide (ug/m <sup>3</sup> )	80	<4.00	<4.00	<4.00
Carbon Monoxide (ug/m <sup>3</sup> )	4.0	0.88	0.64	0.82

#### Ground Water Analysis:

Parameters	Location			
	Acceptable limit	Tubewell	Cherucherrybhagom	Excavation pit
Colour (Hazen)	5.00 (max)	1.00	1.00	1.00
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity (NTU)	1.0	0.2	<0.1	0.1
pH	6.5-8.5	7.15	7.11	6.88
Total Dissolved Solids (mg/L)	500	220	170	190



Total Hardness (as CaCO <sub>3</sub> ) (mg/L)	200 (max)	100	68.0	78.0
Calcium (as Ca) (mg/L)	75.0 (max)	25.6	12.0	12.0
Magnesium (as Mg)	30.0 (max)	8.77	9.25	11.7
Chloride (as Cl) (mg/L)	250 (max)	90.0	73.4	73.4
Iron (as Fe) (mg/L)	1.00 (max)	0.19	0.12	0.18
Total Coli form Bacteria (MPN/100ml)	Absent/100ml	Absent/100ml	Absent/100ml	Absent/100ml
Ecoli	Absent/100ml	Absent/100ml	Absent/100ml	Absent/100ml

 29/10/23