



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/513/2021  
30.11.2021

The Additional Principal Chief Conservator of Forests (C),  
Ministry of Environment, Forests & Climate Change,  
IV<sup>th</sup> Floor, E&F Wings  
Kendriya Sadan,  
Koramangala  
Bangalore – 560 034, Karnataka

महोदय/Sir,

विषय/Sub: Submission of Half yearly Compliance Report to MoEF - Environmental  
and CRZ clearance for Beach sand mining at Chavara, Alappad,  
Panmana and Ayanivelikulangara villages of Kollam District, Kerala – reg

संदर्भ/Ref: 1) EC No J<sup>4</sup>-11015/227 /2015-IA. II (M) dated 30.07.2020  
2) No EP/12.1/194/KER dated 01.07.2016

2021 के II<sup>nd</sup> अर्ध वार्षिक का मोनिटरिंग रिपोर्ट/  
Half yearly Monitoring Report for the 11<sup>nd</sup> Half of 2021

As per the letter (1) referred above, from MoEF&CC, New Delhi conveying the composite  
Environmental and CRZ clearance for beach sand mining in 180 Ha area in the above villages,  
we are submitting herewith the Half yearly report for the 11<sup>nd</sup> Half of 2021.

सादर /Regards,

आपका/Yours faithfully,  
कृते आई आर ई एल (इंडिया) लिमिटेड, चवरा  
For IREL (India) Limited, Chavara

*विश्वनाथ*

*Ammanth*

आर वि विश्वनाथ /R.V.Viswanath  
महाप्रबंधक एवं प्रधान/General Manager & Head

30/11/2021

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 फैक्स / Fax :0476-2680141

पंजीकृत कार्यालय : प्लॉट नं 1207, वीर सावरकर मार्ग, सिद्धिविनायक मंदिर के पास, प्रभादेवि, मुंबई-400 028  
Regd. Office: Plot No.1207, Veer Savarkar Marg, Near Siddhivinayak Temple, Prabhadevi, Mumbai – 400 028  
फोन / Tel. : 022 - 2421 1630 / 2438 2042 फैक्स / Fax : 022 - 2422 0236

## 2021 के II<sup>nd</sup> अर्ध वार्षिक का मोनिटरिंग रिपोर्ट

### Half yearly Monitoring Report for the period April 2021 to September 2021

**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 (Rt) No. 746/07/ID dated 08/06/07 by the Government of Kerala and before commencing the mining operations IREL obtained Environmental and CRZ clearance vide EC No 11-36/2008-IA, II dt 01.03.2011,, from MoEF&CC, New Delhi for beach sand mining in 180 Ha area in the villages of Alappad, Panmana and Ayanivelikulangara. Subsequently vide EC no. No. J-11015/227/2015. IA. II (M) dated 30.07.2020, for the production enhancement to ROM of 750000 tonnes per annum in 180 Ha area in the villages of Alappad, panmana and Ayanivelikutangara. 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:

- ❖ Satisfy applicable requirement
- ❖ Protection of Environment(Including prevention of pollution)
- ❖ Provide safe and healthy working conditions for prevention of work related injury and ill health
- ❖ Fulfill compliance obligations related to products & Services, environment and occupational health & Safety.
- ❖ Conservation and protection of natural resources
- ❖ Eliminate hazards and reduce OH & Risks
- ❖ Prevention of incidents & ill health
- ❖ Consultation and Participation of workers.





**Location:** The project area lies between Latitude 09°00' 55.97" N & Longitude 76°31' 17.19" E and Latitude 09°02' 03.80" N & Longitude 76°30' 29.90" (Toposheet No 58 C/8). A village road passes through the plot. This road connects the plot to NH 47 at Karunagapally at a distance of about 6 km, through Panikkarkadavu bridge, on the north. The broad gauge railway line is about 1 km to the east of NH 47. The nearest railway station is Karunagapally at a distance of about 8 km. M/s Kerala Minerals and Metals Ltd. (KMML), a state government undertaking engaged in beach sand mining, beneficiation and pigment production & IREL are the only two major industries in this area.

### **STATUS OF COMPLAINTS OF EC CONDITIONS**

Clause	EC conditions	Compliances
	<b>Specific Conditions</b>	
1	No mechanical mining will be allowed in Coastal Regulatory Zone- IB	No mechanical mining is carried out in Coastal Regulatory Zone- IB
2	Proper fencing of the area shall be provided for avoiding un-authorized entry of people and cattle falling into the 2-3 m pits filled with water.	Proper fencing of the area is provided for avoiding un-authorized entry of people and cattle falling into the 2-3 m pits filled with water.
3	The mining shall be done in systematic manner and the project authorities shall prepare a map of 180ha lease area indicating the time line of excavation and probable time of handing over the land to the owners, so that they can plan for the future utilization.	Mining is done in systematic manner as per the approved mine plan and a table is prepared indicating the time line of excavation and probable time of handing over the land to the owners
4	Surveillance through installation of CCTV; GPS tracking system for truck transporting the mineral; leak and pilferage proof of the trucks/dumpers shall be made.	Installation of CCTV system is completed .GPS tracking system is now used in transportation of mineral sand to Chavara plant from this project site
5	The PP shall carry out the TCLP analysis during pre and post mining for soil to check the presence of hazardous materials, if any as per constituents of Schedule II of Hazardous & Others Waste Management Rules, 2016.	TCLP analysis carried out as per guidelines from RO, MoEF&CC, Bangalore. No hazardous material used or produced by our Mining operations
6	PP shall take necessary steps to avoid the fugitive dust spreading while refilling the sand. The roads shall be regularly cleaned by the project authorities for clearing of sand.	Roads are regularly cleaned for clearing of sand spillages and also water sprinkling on the haulage road is being done at regular interval for avoiding dust spreading-
7	Proper house-keeping of premises in order to conserve mineral shall be maintained.	Proper house-keeping of premises is being maintained to conserve mineral



8	Proper greening of the area with a green belt plan should be developed and submitted to MoEF&CC. The Project Proponent shall develop greenbelt in 7.5m wide safety zone all along the mine lease boundary as per the guidelines of CPCB in order to arrest pollution emanating from mining operations within the lease. The whole Green belt shall be developed within first 5 years starting from windward side of the active mining area. The development of greenbelt shall be governed as per the EC granted by the Ministry irrespective of the stipulation made in approved mine plan..	Developing of the green belt in 7.5 m safety zone is not feasible in our project, as mining is a wet process, no drilling & blasting involved, environment friendly mining etc and moreover the land has to be given back to the land owners after completing the mining.
9	Concurrent back filling of the mined out area and area already mined in other mining sites is developed properly.	Concurrent back filling of the mined out area is being carried out
10	The budget earmarked for Occupational Health is Rs 18.0 Lakh. The capital cost shall be spent before commencement of mining operation and recurring cost annually. The amount proposed under this head should be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed report along with proof of activities viz. photographs (with geolocation date & time), purchase documents, test reports, photographs & Geolocation of the infrastructures/facilities developed etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.	One Medical camps conducted in the area
11	As committed by the Project Proponent that the budget shall be earmarked for Environmental Management Plan (EMP) of Rs.16.00 Lakh (Capital) & Rs.113.00 Lakh (recurring/annum) which includes i) Rs.16.0 Lakh (Capital) & Rs.10 Lakh (recurring) for Meteorology including wave monitoring, ii) Rs.10.00 Lakh (recurring) for Topography maintenance, iii) Rs 10.00 Lakh (recurring) for Coastal Protection, iv) Rs 15.00 Lakh (Capital) & Rs 5.00Lakh (recurring) for Water, v) Rs 5.0 Lakh (recurring) for Ecological Survey vi) Rs.15.00 Lakh (Capital) for Mangrove and wetland development, vii)	An amount of Rs.30 lakhs was spent towards coastal protection, green belt development and Occupation health monitoring



	Rs.10.00 Lakh (recurring) for Green belt development, Rs.18.00 Lakh (recurring) for Occupational Health & Biological Monitoring, Rs. 10.00 Lakh (recurring) for Radiation Survey, Rs 10.00 Lakh (recurring) for Organization Setup including salary (Only for additional man power), Rs.5.00 Lakh (recurring) for Training and meeting etc., of the organizational Setup, Rs.5.00 Lakh (recurring) for Socio- economic development schemes. Amount proposed under EMP shall be kept in a separate bank account and should be audited annually. The PP should annually submit the audited statement and detailed report along with proof of activities viz. photographs (before & after with geolocation date & time), purchase documents, sampling reports, photographs& Geolocation of the infrastructures/facilities developed etc. to the Regional Office of MoEF&CC before 1st July of every year for the activities carried out during previous year.	
12	Personnel Protective Equipment (PPE) shall provide to all the personnel engaged at crusher, transfer points and other potential dust generating sources..	Personnel Protective Equipments (PPE) are provided to all the employees including contractual employees engaged in:transfer points and other potential dust generating sources.
13	Regular surveillance on Silicosis shall be carried through regular occupational health checkup of 1/3 of the persons every year.	Surveillance on Silicosis is being carried out for our employees once in three years as part of PME
	No ground water intersection shall be made without prior approval from CGWA.	Ensured that No ground water shall be extracted in the CRZ areas.
14	No blasting shall be carried using the NONELs and fly rock control measures	No drilling and blasting practice is in our mining operations.
15	An amount of Rs. 1.50 Cr allocated for the CER shall be spent periodical sea wall maintenance and for other concerns raised during the public hearing.	Rs.1.50 Cr allocated for the CER is spent for periodical sea wall maintenance and for other concerns raised during the public hearing
16	Mining shall be carried out after leaving a barrier of 10 m on both sides of the canal bank (riparian area) on both sides to avoid distraction of fragile riparian ecology and river bank weakening	Mining is carried out after leaving a barrier of 10 m on both sides of the canal bank. However an amendment in the condition for leaving a barrier of 5m is being proposed.
17	After refilling and levelling, plantation shall be carried with native and	After refilling and levelling, plantation is being carried with native and leguminous

	leguminous species.	species
18	The mining and refilling will be done simultaneously and there shall not be gap of more than 100 m between the mining phase and refilling area along the length of the canal at any given point of time so as to strengthen and consolidate the canal bank by simultaneous refilling	Ensured that the gap of less than 100 m between the mining phase and refilling area is always maintained. Mining and refilling is done simultaneously
19	No water shall be discharged to canal. Periodical monitoring of water turbidity in TS canal during mining operations shall be taken up. The multiplication of natural or anthropogenic pressures on the turbidity of water shall be mitigated by stopping sand mining during bad weather	No turbid water is discharged to canal
20	Proper distance shall be maintained between active Mining area and the area where the ecological restoration is taken up.	Proper distance is maintained between active Mining area and the area where the ecological restoration is taken up.
21	No Construction work shall be carried out in Coastal Regulation Zone area	Ensured that No Construction work is carried out in Coastal Regulation Zone area
23	No religious places shall be disturbed without the Consent of locals.	No religious places will be disturbed without the Consent of locals
23	TCLP analysis of both mined and tail materials can be done to check the presence of Hazardous materials and report shall be submitted along with the six monthly monitoring reports	TCLP analysis carried out as per guidelines from RO, MoEF&CC, Bangalore. No hazardous material used or produced by our Mining operations
24	There shall be no waste disposal in to the coastal area.	Ensured that no waste is disposed in to the coastal area.

Standard Conditions: (As Ministry's O.M No 22-34/2018-IA.III dated 8.01.2019&16.01.2020)

	I. Statutory compliance	
Clause	conditions	Compliances
1	The EC granted to the project is strictly under the provisions of the EIA Notification 2006 and its amendments. It does not tantamount/ construe to approvals/ consent/ permissions, etc. required to be obtained under any other Acts/ Rules/ Subordinate legislations, etc., as may be applicable to the project.	Obtained the approvals/ consent/ permissions, etc. required under any other Acts/ Rules/ Subordinate legislations, etc., as may be applicable to the project
2	The Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors before	Not applicable for our project






	commencing the mining operations.	
3	The State Government concerned shall ensure that mining operation shall not be commenced till the entire compensation levied, if any, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of Judgment of Hon'ble Supreme Court dated 2nd August, 2017 in Writ Petition (Civil) No. 114 of 2014 in matter of Common Cause versus Union of India & Ors	Not applicable for our project
4	The Project Proponent shall follow the mitigation measures provided in MoEFCC's Office Memorandum No. Z-11013/57/2014-IA. II (M), dated 29th October, 2014, regarding "Impact of mining activities on Habitations- Issues related to the mining Projects wherein Habitations and villages are the part of mine lease areas or Habitations and villages are surrounded by the mine lease area	Mitigation measures provided in EMP will be followed
5	A copy of EC letter will be marked to concerned Panchayat / local NGO etc. if any, from whom suggestion / representation has been received while processing the proposal	complied
6	The Project Authorities should widely advertise about the grant of this EC letter by printing the same in at least two local newspapers, one of which shall be in vernacular language of the concerned area. The advertisement shall be done within 7 days of the issue of the clearance letter mentioning that the instant project has been accorded EC and copy of the EC letter is available with the State Pollution Control Board/Committee and web site of the Ministry of Environment, Forest and Climate Change ( <a href="http://www.parivesh.nic.in">www.parivesh.nic.in</a> ). A copy of the advertisement may be forwarded to the concerned MoEFCC Regional Office for compliance and record	complied
	II. Air quality monitoring and preservation	
7	The Project Proponent shall install a minimum of 3 (three) online Ambient Air	Ambient Air Quality Monitoring is being done and it is provided as Annexure. Data



	<p>Quality Monitoring Stations with 1 ( one) in upwind and 2 (two) in downwind direction based on long term climatological data about wind direction such that an angle of 120° is made between the monitoring locations to monitor critical parameters, relevant for mining operations, of air pollution viz. PM10, PM2.5, NO2, CO and SO2 etc. as per the methodology mentioned in NAAQS Notification No. B-29016/20/90/PCI/I, dated 18.11.2009 covering the aspects of transportation and use of heavy machinery in the impact zone. The ambient air quality shall also be monitored at prominent places like office building, canteen etc. as per the site condition to ascertain the exposure characteristics at specific places. The above data shall be digitally displayed within 03 months in front of the main Gate of the mine site.</p>	is Displayed at Mines office in Project site
8	<p>Effective safeguard measures for prevention of dust generation and subsequent suppression (like regular water sprinkling, metalled road construction etc.) shall be carried out in areas prone to air pollution wherein high levels of PM10 and PM2.5 are evident such as haul road, loading and unloading point and transfer points. The Fugitive dust emissions from all sources shall be regularly controlled by installation of required equipments/ machineries and preventive maintenance. Use of suitable water-soluble chemical dust suppressing agents may be explored for better effectiveness of dust control system. It shall be ensured that air pollution level conform to the standards prescribed by the MoEFCC/ Central Pollution Control Board.</p>	Wet process , however water sprinkling is being in practice to prevent dust generated during transportation. The air pollution levels are within the prescribed limits.
	III. Water quality monitoring and preservation	
9	<p>In case, immediate mining scheme envisages intersection of ground water table or withdrawal of the groundwater, the PP shall obtain formal clearance from CGWA. In case, mining operation involves intersection of ground water table at a later stage, then PP shall</p>	Ground water is not extracted.



	ensure that prior approval from CGWA and MoEFCC is in place before such mining operations. The permission for intersection of ground water table shall essentially be based on detailed hydro-geological study of the area.	
10	Project Proponent shall regularly monitor and maintain records w.r.t. ground water level and quality in and around the mine lease by establishing a network of existing wells as well as new piezo-meter installations during the mining operation in consultation with Central Ground Water Authority/ State Ground Water Department. The Report on changes in Ground water level and quality shall be submitted on six- monthly basis to the Regional Office of the Ministry, CGWA and State Groundwater Department/ State Pollution Control Board.	water samples are collected and being monitored and it is provided as Annexure
11	The Project Proponent shall undertake regular monitoring of natural water course/ water resources/ springs and perennial nallahs existing/ flowing in and around the mine lease including water quality of upstream and downstream of water bodies vis-a-vis suitability for usage as per CPCB criteria; flow rate and maintain its records. Clearly showing the trend analysis on six-monthly compliance report	Monitoring is done and changes are incorporated during updation of the surface plan. Water quality is also monitored
12	Project Proponent shall plan, develop and implement rainwater harvesting measures on long term basis to augment ground water resources in the area in consultation with Central Ground Water Board/ State Groundwater Department. A report on amount of water recharged needs to be submitted to Regional Office MoEFCC annually	Since the land after mining and refilling will be hand back to the land owners, land owners will be pursued to construct ground water recharge system and Rain water harvesting structures in the rehabilitation and resettlement colony
13	Industrial waste water (workshop and waste water from the mine) should be properly collected and treated so as to conform to the notified standards prescribed from time to time. The standards shall be prescribed through Consent to Operate (CTO) issued by concerned State Pollution Control Board (SPCB). The workshop effluent shall be	Not applicable for our project



	treated after its initial passage through Oil and grease trap.	
14	The water balance/water auditing shall be carried out and measure for reducing the consumption of water shall be taken up and reported to the Regional Office of the MoEF&CC and State Pollution Control Board/Committee	water balancing is done but water auditing is not done since water is drawn from canal
	IV. Noise and vibration monitoring and prevention	
15	The peak particle velocity at 500m distance or within the nearest habitation, whichever is closer shall be monitored periodically as per applicable DGMS guidelines	Not applicable for our project
16	The illumination and sound at night at project sites disturb the villages in respect of both human and animal population. Consequent sleeping disorders and stress may affect the health in the villages located close to mining operations. Habitations have a right for darkness and minimal noise levels at night. PPs must ensure that the biological clock of the villages is not disturbed; by orienting the floodlights/ masks away from the villagers and keeping the noise levels well within the prescribed limits for day /night hours	Mining operations are a wet process and it is carried out using electrically operated pumps/machines. Hence there is no noise generation The noise levels is monitored and are found within the prescribed limits for day/night hours. The biological clock of the villages is not disturbed by the project
17	The Project Proponent shall take measures for control of noise levels below 85 dBA in the work environment. The workers engaged in operations of HEMM, etc. should be provided with ear plugs /muffs. All personnel including laborers working in dusty areas shall be provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects. The PP shall be held responsible in case it has been found that workers/ personals/ laborers are working without personal protective equipment.	Noise level measured and noted that the Machinaries noise is below 85 dBA. HEMM operators are provided with ear plugs. All personnel including laborers working in dusty areas are provided with protective respiratory devices along with adequate training, awareness and information on safety and health aspects.
	V. Mining plan	
18	The Project Proponent shall adhere to the working parameters of mining plan which was submitted at the time of EC appraisal wherein year-wise plan was mentioned for total excavation i.e.	Mining is carried out as per the mining plan. Change in basic mining proposal proposed if any, will be carried out after obtaining prior approval of Ministry





	quantum of mineral, waste, over burden, inter burden and top soil etc .. No change in basic mining proposal like mining technology, total excavation, mineral & waste production, lease area and scope of working (viz. method of mining, overburden & dump management, O.B & dump mining, mineral transportation mode, ultimate depth of mining etc.) shall not be carried out without prior approval of the Ministry of Environment, Forest and Climate Change, which entail adverse environmental impacts, even if it is a part of approved mining plan modified after grant of EC or granted by State Govt. in the form to Short Term Permit (STP), Query license or any other name	
19	PP shall ensure the monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining. The compliance status shall be submitted half-yearly to the MoEFCC and its concerned Regional Office	monitoring and management of rehabilitated areas until the vegetation becomes self-sustaining will be ensured
	Vi. Land reclamation	
20	The Overburden (O.B.) generated including rejects / waste during the mining operations shall be stacked at earmarked OB dump site(s) only and it should not be kept active for a long period of time. The physical parameters of the OB dumps like height, width and angle of slope shall be governed as per the approved Mining Plan as per the guidelines/circulars issued by D.G.M.S w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of top soil/OB dumps. The topsoil shall be used for land reclamation and plantation.	Not applicable for our project
21	The slope of dumps shall be vegetated in scientific manner with suitable native species to maintain the slope stability, prevent erosion and surface run off. The selection of local species regulates local climatic parameters and help in adaptation of plant species to the microclimate. The gullies formed on slopes should be adequately taken care of as it impacts the overall stability of	Not applicable for our project

	<p>dumps. The dump mass should be consolidated with the help of dozer/ compactors thereby ensuring proper filling/ leveling of dump mass. In critical areas, use of geo textiles/ gee-membranes / clay liners/ Bentonite etc. shall be undertaken for stabilization of the dump.</p>	
22	<p>Catch drains, settling tanks and siltation ponds of appropriate size shall be constructed around the mine working, mineral yards and Top Soil/OB/Waste dumps to prevent run off of water and flow of sediments directly into the water bodies (Nallah/ River/ Pond etc.). The collected water should be utilized for watering the mine area, roads, green belt development, plantation etc. The drains/ sedimentation sumps etc. shall be de-silted regularly, particularly after monsoon season, and maintained properly.</p>	Not applicable for our project
23	<p>Check dams of appropriate size, gradient and length shall be constructed around mine pit and OB dumps to prevent storm run-off and sediment flow into adjoining water bodies. A safety margin of 50% shall be kept for designing of sump structures over and above peak rainfall (based on 50 years data) and maximum discharge in the mine and its adjoining area which shall also help in providing adequate retention time period thereby allowing proper settling of sediments/ silt material. The sedimentation pits/ sumps shall be constructed at the corners of the garland drains.</p>	Not applicable for our project
24	<p>The top soil, if any, shall temporarily be stored at earmarked site(s) within the mine lease only and should not be kept unutilized for long. The physical parameters of the top soil dumps like height, width and angle of slope shall be governed as per the approved Mining Plan and as per the guidelines framed by DGMS w.r.t. safety in mining operations shall be strictly adhered to maintain the stability of dumps. The topsoil shall be used for land reclamation and plantation purpose</p>	Not applicable for our project



	VII. Transportation	
25	<p>No Transportation of the minerals shall be allowed in case of roads passing through villages/ habitations. In such cases, PP shall construct a 'bypass' road for the purpose of transportation of the minerals leaving an adequate gap (say at least 200 meters) so that the adverse impact of sound and dust along with chances of accidents could be mitigated. All costs resulting from widening and strengthening of existing public road network shall be borne by the PP in consultation with nodal State Govt. Department. Transportation of minerals through road movement in case of existing village/ rural roads shall be allowed in consultation with nodal State Govt. Department only after required strengthening such that the carrying capacity of roads is increased to handle the traffic load. The pollution due to transportation load on the environment will be effectively controlled and water sprinkling will also be done regularly. Vehicular emissions shall be kept under control and regularly monitored. Project should obtain Pollution Under Control (PUC) certificate for all the vehicles from authorized pollution testing centers</p>	<p>Permission obtained from State Government to use and maintenance the road within the mining lease which is used for transportation</p>
26	<p>The Main haulage road within the mine lease should be provided with a permanent water sprinkling arrangement for dust suppression. Other roads within the mine lease should be wetted regularly with tanker- mounted water sprinkling system. The other areas of dust generation like * crushing zone, material transfer points, material yards etc. should invariably be provided with dust suppression arrangements. The air pollution control equipments like bag filters, vacuum suction hoods, dry fogging system etc. shall be installed at Crushers, belt-conveyors and other areas prone to air pollution. The belt conveyor should be fully covered to avoid generation of dust while transportation. PP shall take necessary measures to avoid generation of fugitive dust emissions</p>	<p>water sprinkling on main haulage road is being in practice</p>

	<b>VIII. Green Belt</b>	
27	<p>The Project Proponent shall make necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease. The development of such grazing land shall be done in consultation with the State Government. In this regard, Project Proponent should essentially implement the directions of the Hon'ble Supreme Court with regard to acquisition of grazing land. The sparse trees on such grazing ground, which provide mid-day shelter from the scorching sun, should be scrupulously guarded/ protected against felling and plantation of such trees should be promoted.</p>	necessary alternative arrangements for livestock feed by developing grazing land with a view to compensate those areas which are coming within the mine lease will be explored
28	<p>The Project Proponent shall undertake all precautionary measures for conservation and protection of endangered flora and fauna and Schedule-I species during mining operation. A Wildlife Conservation Plan shall be prepared for the same clearly delineating action to be taken for conservation of flora and fauna. The Plan shall be approved by Chief Wild Life Warden of the State Govt.</p>	No endangered flora and fauna and Schedule-I species are available in the project site. Certificate from Chief Conservator of forest obtained for the same
	<b>IX. Public hearing and human health issues</b>	
29	<p>The Project Proponent shall ensure that Personnel working in dusty areas should wear protective respiratory devices and they should also be provided with adequate training and information on safety and health aspects.</p>	Personnel working in dusty areas is provided with protective respiratory devices and they are also provided with adequate training and information on safety and health aspects.
30	<p>Project Proponent shall make provision for the housing for workers/labors or shall construct labor camps within/outside ( company owned land) with necessary basic infrastructure/ facilities like fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche for kids etc. The housing may be provided in the form of temporary structures which can be removed after the completion of the project related infrastructure. The</p>	Not applicable as the employees are from the nearby local areas only



	domestic waste water should be treated with STP in order to avoid contamination of underground water.	
31	The activities proposed in Action plan prepared for addressing the issues raised during the Public Hearing shall be completed as per the budgetary provisions mentioned in the Action Plan and within the stipulated time frame. The Status Report on implementation of Action Plan shall be submitted to the concerned Regional Office of the Ministry along with District Administration.	The activities proposed during the Public Hearing is being complied and it is ongoing process. The Status Report on implementation of Action Plan will be submitted to the concerned Regional Office of the Ministry along with District Administration.
	X. Miscellaneous	
32	The Project Proponent shall prepare digital map (land use & land cover) of the entire lease area once in five years purpose of monitoring land use pattern and submit a report to concerned Regional Office of the MoEFCC	Digitalmap (land use & land cover) of the entire lease area for the purpose of monitoring land use pattern will be prepared
33	The Project Authorities should inform to the Regional Office regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	It is not applicable as it is ongoing project
34	The Project Proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards to the MOEFCC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board	six monthly compliance reports on the status of the implementation of the stipulated environmental safeguards will be submitted to MOEFCC & its concerned Regional Office, Central Pollution Control Board and State Pollution Control Board
35	A separate 'Environmental Management Cell' with suitable qualified manpower should be set-up under the control of a Senior Executive. The Senior Executive shall directly report to Head of the Organization. Adequate number of qualified Environmental Scientists and Mining Engineers shall be appointed and submit a report to RO, MoEFCC.	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
36	The concerned Regional Office of the MoEFCC shall randomly monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the MoEFCC officer(s) by furnishing the requisite data / information / monitoring reports.	IREL extend full cooperation to the MoEFCC officers by furnishing the requisite data / information / monitoring reports during their inspection



37	In pursuant to Ministry's O.M No 22-34/2018-IA.III dated 16.01.2020 to comply with the direction made by Hon'ble Supreme Court on 8.01.2020 in W.P. (Civil) No 114/2014 in the matter Common Cause vs Union of India, the mining lease holder shall after ceasing mining operations, undertake re-grassing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc	the possibility of regressing the mining area and any other area which may have been disturbed due to other mining activities and restore the land to a condition which is fit for growth of fodder, flora, fauna etc will be explored
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#### Other conditions

Clause	Conditions	Compliance status
1	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection	Understood that Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection
2	Concealing factual data or submission of false/fabricated data and failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of Environment (Protection) Act, 1986.	Understood the condition and ensure false data will not be provided
3	The above conditions will be enforced inter-alia, under the provisions of the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rules made there under and also any other orders passed by the Hon'ble Supreme Court of India/ High Court and any other Court of Law relating to the subject matter.	Understood the condition
4	Any appeal against this environmental clearance shall lie with the National Green Tribunal, if preferred, within a period of 30 days as prescribed under Section 16 of the National Green Tribunal Act, 2010	Understood the condition



### 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 April 2021 to September 2021. The analysis of the samples were done through M/s Standard<sup>s</sup> Environmental & Analytical Laboratories, Udyogamandal, Ernakulam, an NABL accredited laboratory. The results are consolidated below:

#### Ambient Air Monitoring:

Parameters	KSPCB Limit	Near mining office at Vellanathuruthu	East of Panickar Kadavu bridge	Pandarathuruthu school
Particulate Matter PM <sub>10</sub> (ug/m <sup>3</sup> )	100	72.8	50.5	50.5
Particulate Matter PM <sub>2.5</sub> (ug/m <sup>3</sup> )	60	45.1	26.9	25.3
Sulphur Dioxide (ug/m <sup>3</sup> )	80.0	<2.00	<2.00	<2.00
Nitrogen Dioxide (ug/m <sup>3</sup> )	80.0	<2.00	<2.00	<2.00
Carbon Monoxide (ug/m <sup>3</sup> )	4.0	<1.15	<1.15	<1.15

#### Ground water Analysis:

Parameters	Location			
	Acceptable limit	Open well near PHC, Vellanathuruthu	Dredge Pond at Vellanathuruthu	Excavation pit
Colour (Hazen)	5.00( max)	1.00	1.00	1.00
Odour	Agreeable	Agreeable	Agreeable	Agreeable



Turbidity (NTU)	1.0	0.5	0.8	0.6
pH	6.5 – 8.5	6.86	6.90	6.95
Total Dissolved Solids (mg/L)	500 (max)	322	327	305
Total Hardness (as CaCO <sub>3</sub> ) (mg/L)	200 (max)	122	116	106
Calcium (as Ca) (mg/L)	75.0 (max)	40.8	33.6	36.0
Magnesium (as Mg) (mg/L)	30.0 (max)	4.87	7.79	3.89
Chloride (as Cl) (mg/L)	250 (max)	152	166	48.0
Iron (as Fe) (mg/L)	1.00 (max)	0.29	0.39	0.31
Total Coli form Bacteria (MPN/100ml)	Absent/100 ml	Absent/100 ml	Absent/100 ml	Absent/100 ml
E coli	Absent/100 ml	Absent/100 ml	Absent/100 ml	Absent/100 ml

