



आईआरईएल (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 Company

TS/ENVR/ OSCOM/

4th November 2025

To,
The Additional Principal Chief Conservator of Forests,
Government of India,
Ministry of Environment, Forests & Climate Change (MoEF & CC),
Eastern Regional Office (Eastern Zone),
A/3, Chandrasekharpur, Bhubaneswar-751 023.

Sub.- Half-yearly progress report on Mining & Mineral Separation Units of OSCOM.

Ref: MoEF&CC Environmental Clearance (EC) letter No.J-11015/528/2007-IA.II(M) dated
11th January 2019 for capacity expansion of Mining & Mineral Separation Units.

Dear Sir,

This has reference to the above subject & references; we are herewith enclosing the compliance report for OSCOM operation for the period April 2025 to September 2025 for your kind information.

As advised, we are submitting the soft-copy to email ID - roe.z.bsr-mef@nic.in for kind information.

With regards.

Yours truly,
For IREL (India) Limited,

(C V R Murty)
GM & Head, OSCOM

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धिविनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028

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IREL (India) Limited
Six Monthly Compliance Report (April 2025 to September 2025)

Format for filling up of Compliance report

Annexure-1

Name of the project: 1. Mining & Mineral Separation of OSCOM, IREL (India) Limited

Clearance letters No and Date:

i. Environmental Clearance (EC) vide letter No.J-11015/528/2007- IA.II (M) dated 11th January 2019 for capacity expansion of Mining & Mineral Separation Units.

Period of Compliance Report: **April 2025 to September 2025**

Sub: Compliance of various points raised by MoEF letter no. J-11015/528/2007- IA. II(M) dated 11th January 2019 for capacity expansion of Mining & Mineral Separation Units.

Sl No.	Specific Conditions	Compliance
1	This Environmental Clearance is granted subject to outcome of Hon'ble Supreme Court of India, Hon'ble High Court of Odisha, Hon'ble NGT or any other Court of Law, if any, as may be applicable to this project.	Agreed upon
2	This Environmental Clearance will not be operational till such time the Project Proponent complies with all the statutory requirements and judgment of Hon'ble Supreme Court dated the 2 nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.	Agreed upon. All statutory requirements are complied.
3	The Department of Mining & Geology, State Government shall ensure that mining operation shall not commence till the entire compensation levied, for illegal mining paid by the Project Proponent through their respective Department of Mining & Geology in strict compliance of judgment Hon'ble Supreme Court dated the 2 nd August 2017 in Writ Petition (Civil) No. 114 of 2014 in the matter of Common Cause versus Union of India and Ors.	Agreed upon
4	No mining activities will be allowed in forest area, if any, for which the forest Clearance is not available	Forest clearance has been obtained vide file no.8-15/2018FC dated 15 th December 2022.
5	The Environmental Clearance is subject to obtaining requisite NBWL Clearance, if any, from the Standing Committee of National Board for Wildlife for mining project.	Agreed upon NOC received vide letter no.11284/7WLFD & WLC-125/2021 dated 09.12.2022 from PCCF& Chief Wildlife Warden,Odisha
6	The Project Proponent shall obtain Consent to Operate from State Pollution Control Board, Odisha and effectively implement all the conditions stipulated therein.	The Consent Order No. 636/24-25 dated 28.03.2024, issued by Odisha State Pollution Control Board (OSPCB) under Water & Air Act renewed and validity up to 31.03.2029.
7	In inter-tidal zone, only manual mining operations shall be carried out deploying persons using baskets and hand spades for collection of ore or minerals as per the approved mining plan.	Agreed upon

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8	Necessary AERB Clearance shall be obtained under the Atomic Energy (Radiation Protection) Rules, 2004 for operation of BSM (Beach Sand Minerals) facility.	AERB clearance has been obtained vide licence no. AERB/CN/OPSD/55222/IREL/BSM-O/2024/790 A dated 27 th Aug 2024 valid up to 31.08.2029.
9	No mining shall be carried out in "NO GO ZONE / NO OPERATION ZONE" as stipulated in the conditions in the NOC letter No. 3536/WL(C) (SSP) – 149/2012, dated 11 th May 2012, granted by Principal Chief Conservator of Forests & Chief Wildlife Warden.	Agreed upon
10	No mining shall be carried out in the CRZ-I area i.e the area within HTL & LTL.	No mining is carried out in the area within HTL & LTL.
11	No drilling and blasting shall be involved.	No drilling and blasting are involved.
12	After mining, the mined out area shall be backfilled and levelled to near original topography and plantation should be developed over the same, so that, mining activity do not affect the beach profile.	After mining, the mined out areas are back filled and leveled to near original topography and plantation activity carried out.
13	Conditions as laid down by the Odisha State Coastal Zone Management Authority as stipulated vide letter No. 13716/F&E dated 24 th July 2012 while recommending for CRZ clearance shall be strictly complied as given below: a) Green belt with local species has to be taken up if Govt. land is available. b) The present status of sand dunes in the Odisha Space Application Centre (ORSAC) & validated by DFO, Berhampur. c) The sand dunes should not be mined. d) During breeding season of Olive Ridley Turtles, the restrictions imposed by PCCF (Wildlife) are to be followed.	Being complied
14	Conditions of NOC, granted by Principal Chief Conservator of Forests & Chief Wildlife Warden (PCCF& CWLW) vide letter No. 3536/WL/(C)(SSP)-149/2012 dated 11 th May 2012, shall be strictly complied as given below: a) No mining shall be carried out in "NO GO ZONE / NO OPERATION ZONE". b) The capacity expansion of Mining and Mineral Separation Unit has to be within the premises of the existing unit of OSCOM premises of IREL (India) Limited at village Matikhalo, Chatrapur, District: Ganjam, Odisha under operation and no extra land or deforestation shall be made. c) The 5 (five) Km zone of the nesting / mass nesting site of endangered Olive Ridley sea turtles from Rushikulya river mouth are shall be as a NO GO AREA or NO DEVELOPMENT ZONE. No mining or sand extraction or habitat alteration or	Being complied a) Agreed upon b) The capacity expansion of Mining and Mineral Separation Unit is within the premises of the existing unit of OSCOM. c) No mining or sand extraction or habitat alteration or activities of similar nature are done in the area of endangered Olive Ridley sea turtles from Rushikulya.

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	<p>activities of similar nature shall be done in the area as per the map authenticated by competent authorities of the Odisha Forest Department.</p> <p>d) The Proponent shall take up the mining or sand extraction activities starting from the southern extreme end of the lease hold area till 10 km zone of the Rushikulya river area as per the map authenticated by competent authorities of the Odisha Forest Department. This may give the working period of 8-9 years. Before one year of reaching the 10 km zone segment of the Rushikulya river mouth area, the User Agency shall apply for fresh "No Objection".</p> <p>e) Within the existing unit as well as proposed expansion site, the User Agency shall take all necessary steps to reduce its outdoor illumination during the mass emergence of Olive Ridley sea turtles and their hatchings.</p> <p>f) Release of effluents or by-products of the factory shall be as per the norms of the OSPCB. Toxic chemicals and by-products shall not be released into the Rushikulya River since it is likely to result in reducing the food base of marine turtles. And likely to cause pollution of river/ sea water affecting estuarine and marine wildlife.</p> <p>g) This NOC will remain valid from the date of issue of this letter till 2019 or till reaching the 10 km zone from the Rushikulya River mouth or till the area remains under safe category on wildlife resource conservation considerations, whichever is earlier in the interest of environmental protection.</p>	<p>d) Agreed upon NOC was applied before one year of reaching 10 km zone segment of Rushikulya River mouth and permission have been accorded from CWLW vide letter ref no. 11284/7WLFD & WLC-125/2021 dated 09.12.2022 from PCCF& Chief Wildlife Warden, Odisha.</p> <p>e) Being complied.</p> <p>f) Agreed upon</p> <p>g) Agreed upon</p>
15	A 15 m barrier of no mining zone all along the side facing the nallah/ water body (Tampara lake) passing thorough the lease area or if passing adjacent the lease shall be demarcated and thick vegetation of native species raised. Status of implementation shall be submitted to the Regional Office of the Ministry on half yearly basis.	Agreed upon Fencing done all along the Tampara Lake & plantation done with native species.
16	Out of 1395.400ha of mineable land, 20.737ha of land covers four small villages of Arjipalli Panchayat namely Bara Arjipalli, Sana Arjipalli Sana Arjipalli (Katuru) and Kandra Arjipalli. As informed by the Proponent, though the displacement is temporary in nature, Rehabilitation & Resettlement (R&R) benefits to the temporarily displaced Project Affected Families (PAFs) shall be provided in consultation with Local Administration as per the provisions of Odisha Resettlement & Rehabilitation Policy, 2006, National Rehabilitation & Resettlement Policy, 2007 and payment of compensation & annual lease rent shall be as per the provisions under MM (D&R) Act.	Agreed upon R & R plan is prepared in consultation with local Administration and approved by District collector, Ganjam. As on date no family displaced due to mining activities.



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	1957. Need based assessment for the nearby villages shall be conducted to study economic measures which can help in upliftment of poor section of society. Income generating projects/tools such as development of fodder farm, fruit bearing orchards, vocational training etc. can form a part of such programme. Company shall provide separate budget for community development activities and income generating programmes. This will be in addition to vocational training for individuals imparted to take up self-employment and jobs.	
17	Implementation of conservation plan for schedule I species as approved by the Chief Wild life Warden, Bhubaneswar.	Being complied
18	Identification of sand dunes shall be done prior to undertaking mining activities and their conservation shall be as per MOEF&CC guidelines from time to time. No flattening of sand dunes shall be carried out. Dressing or altering the sand dunes, hills, natural features including landscape changes shall not be carried out for beautification/ recreational purposes. Precautions shall be taken to prevent intrusion of sea water into hinterland to avoid problem of submission/flooding.	Being complied
19	Tailing and rejects shall be filled back systematically after separating the heavy/rare minerals. Sand tailing shall be put back at the mined area on completion of extraction of rare minerals. Afforestation shall be taken up with suitable species on mined out areas to prevent erosion of shoreline. Under no circumstances, the tailings will be dumped in agricultural lands, wet lands, paddy fields, canals and the backfilling will be carried out only in the inland mined out areas.	Tailing and rejects are back filled systematically after separating the heavy/rare minerals. Tailing put back at the mined out area on completion of extraction of Atomic Minerals from inland areas. Afforestation are being carried out with suitable species on mined out areas.
20	The mining activities shall be regulated in such a way that there will be minimum disturbance to the fauna during spawning and brooding period i.e from November to March.	Being complied
21	Mining shall be carried out in phases only. Simultaneously opening of entire beach front is not permissible. There shall be uninterrupted access to the seafront. Minimum 20 m width of approach roads shall be provided where necessary.	Being complied
22	Mining shall be carried out by permitted methods without the use of any forms of blasting. Use of explosives for blasting is prohibited. The mining should be stated near sea side and mining should be progressed parallel to sea coast so that inland water table is not disturbed.	Being complied
23	Radiation survey shall be carried out as stipulated by the Atomic Minerals Directorate for Exploration and Research, Department of Atomic Energy, Government of India to ascertain the effects of radioactivity minerals.	As stipulated by AMDER, radiation surveys are carried out by the Health Physics Unit of BARC.

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24	Regular monitoring of water quality upstream and downstream of adjoining water bodies shall be carried out and record of monitoring data should be maintained and submitted to Ministry of Environment, Forests & Climate Change, its Regional Office, Odisha, Central Groundwater Authority, Regional Director, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Regular monitoring of water quality upstream and downstream of adjoining water bodies are carried out by an NABL accredited agency and record of monitoring data are maintained and submitted to MoEF&CC..
25	Mineral handling plant shall be provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points should also have efficient dust control arrangements. These should be properly maintained and operated.	Mineral handling plant is provided with adequate number of high efficiency dust extraction system. Loading and unloading areas including all the transfer points are also have efficient dust control arrangements.
26	A final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest and Climate Change 5 years in advance of final mine closure for approval.	Agreed upon.

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Standard conditions:

Sl No.	Standard Conditions	Compliance
1	No change in mining technology and scope of working should be made without prior approval of the Ministry of Environment, Forest and Climate Change.	Agreed upon
2	No change in the calendar plan including excavation, quantum of beach sand mineral i.e. Illeminite, Rutile, Zircon, Monazite, Sillimanite and Garnet and waste should be made.	Agreed upon
3	The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and ground water) for the project.	Agreed upon
4	Mining shall be carried out as per the provisions outlined in mining plan approved by AMD as well as by abiding to the guidelines of Directorate General Mines Safety (DGMS).	Being complied
5	The lands which are not owned by Proponent, mining will be carried out only after obtaining the consents from all the concerned land owners as per the provisions of the Atomic Mineral Concession Rules, 1960 and MMDR Act, 1957.	Being complied
6	Digital processing of the entire lease area using remote sensing technique shall be carried out regularly once in three years for monitoring land use pattern and report submitted to Ministry of Environment, Forest and Climate Change its Regional Office.	Agreed upon.
7	The critical parameters as per the Notifications 2009 such as PM ₁₀ , PM _{2.5} , NO _x , and SO _x etc. in the ambient air within the impact zone, peak particle velocity at 300m distance or within the nearest habitation, whichever is closer shall be monitored periodically. Further, quality of discharged water shall also be monitored [TDS, DO, PH and Total Suspended Solids (TSS)]. The monitored data shall be uploaded on the web site of the company as well as displayed on a display board at the project site at a suitable location near the main gate of the Company in public domain. The circular No. J-20012/1/2006-IA.II (M) dated 27.05.2009 issued by Ministry of Environment, Forest and Climate Change shall also be referred in this regard for its compliance.	Ambient Air Quality Monitoring (AQM) stations and quality of discharged water monitoring is being carried out by M/s ITS Testing Laboratory Private Limited., Noida (U.P), a NABL accredited & MoEF&CC authorized agency, at five stations Mining area (south & north), IREL Colony, Bada Arjipalli, Kanamana and in plant area on regular basis. From the monitoring data, it is seen that the all the data are within the norms. Monitored data is uploaded in company website.
8	Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of PM ₁₀ , PM _{2.5} such as haul road, loading and unloading points and transfer points. Fugitive dust emissions from all the sources shall be controlled regularly. It shall be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard. Monitoring of Ambient Air	Regular water sprinkling are carried out in critical areas prone to air pollution and having high levels of PM ₁₀ , PM _{2.5} such as haul road, loading and unloading points and transfer points.

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	Quality to be carried out based on the Notifications 2009, as amended from time to time by the Central Pollution Control Board.	
9	Regular monitoring of ground water level and quality shall be carried out in and around the mine lease by establishing a network of existing wells and constructing new piezometers during the mining operation. The project proponent shall ensure that no natural water course and/or water resources shall be obstructed due to any mining operations. The monitoring shall be carried out four times in a year pre-monsoon (April-May), Monsoon (August), post monsoon (November) and winter (January) and the data thus collected may be sent regularly to Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Directory, Central Ground Water Board.	Ground water monitoring is regularly carried out inside OSCOM on monthly basis and around OSCOM (from local villages) on quarterly basis in a year and half yearly reports are sent to the Regional Office, Ministry of Environment and Forests, Bhubaneswar regularly.
10	Regular monitoring of the flow rate of the springs and perennial nallahs flowing in and around the mine lease shall be carried out and records maintain. The natural water bodies and or streams which are flowing in and around the village, should not be disturbed. The water Table should be nurtured so as not to go down below the pre-mining period. In case of any water scarcity in the area, the project Proponent has to provide water to the villagers for their use. A provision for regular monitoring of water table in open dug wall located in village should be incorporated to ascertain the impact of mining over ground water table.	Being complied Monitoring of water table in open dug wall located in villages is under taken by IREL through third party agency i.e M/s ITS Testing Laboratory Private Limited., Noida (U.P), a NABL accredited and MoEF&CC authorized agency. Results of study are kept in records.
11	Regular monitoring of water quality upstream and downstream of water bodies shall be carried out and record of monitoring data should be maintained and submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office, Central Ground Water Authority and Regional Directory, Central Ground Water Board, State Pollution Control Board and Central Pollution Control Board.	Water quality monitoring is regularly carried out inside OSCOM on monthly basis and around OSCOM (from local villages) on quarterly basis in a year and half yearly reports are sent to the Regional Office, Ministry of Environment and Forests, Bhubaneswar regularly.
12	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 light/night hours.	Being complied.
13	Main haulage road in the mine should be provided with permanent water sprinkles and other roads should be regularly wetted with water tankers fitted with sprinkles. The material transfer points should invariably be provided with Bag filters	Water sprinkler are engaged for regular water sprinkling on Main haulage road in the mining area.

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	and or dry fogging system. In case of Belt-conveyors facilities the system should be fully covered to avoid air bone dust; Use of effective sprinkler system to suppress fugitive dust on haul roads and other transport roads shall be ensured.	
14	Sufficient number of Gullies to be provided for better management of water. Regular Monitoring of pH shall be included in the monitoring plan and report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	Regular Monitoring of pH are being carried out and reports are submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.
15	There shall be planning, developing and implementing facility of rainwater harvesting measures on long term basis and implementation of conservation measures to augment ground resources in the area in consultation with Central Ground Water Board.	Rainwater harvesting measures are implemented to recharge the ground resources.
16	The reclamation at waste dump sites shall be ecologically sustainable. Scientific reclamation shall be followed. The local species may be encouraged and species are so chosen that slope, bottom of the dumps and top of the dumps are able to sustain these species. The aspect of the dump and is also a factor which regulates some climatic parameters and allows only species adopted species to that micro climate.	Being complied.
17	The top soil, if any, shall temporarily be stored at earmarked site(s) only and it should not be kept unutilized for long. The topsoil shall be used for land reclamation and plantation. The over burden (OB) generated during the mining operations shall be stacked at earmarked dump site(s) only and it should not be kept active for a long period of time. The OB dumps should be scientifically vegetated with suitable native species to prevent erosion and surface run off. In critical areas, use of geo textiles shall be undertaken for stabilization of the dump. The entire excavated area shall be backfilled and afforested. Monitoring and management of rehabilitated area should continue until the vegetation becomes self-sustaining. Compliance status shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	Complied
18	Plantation shall be raised in a 7.5m wide green belt in the safety zone around the mining lease, backfilled and reclaimed area, around water body, along the roads etc. by planting the native species in consultation with the local DFO/Agriculture Department and as per CPCB Guidelines. The density of the trees should be around 2500 plants per ha. Greenbelt shall be developed all along the mine lease area in a phased manner and shall be completed within first five years.	Plantation activities are undertaken over backfilled reclaimed areas. Safety zone plantation around the mining lease hold areas are being carried out in phased manner.



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19	Project Proponent shall follow the mitigation measures provided in Office Memorandum No. Z-11013/57/2014-IA.II (M) , dated 29 th October, 2014, titled "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", if any, applicable to the project.	Complied
20	The project Proponent shall take all precautionary measures during mining operation for conservation and protection of endangered fauna, if any, spotted in the study area. Action plan for conservation of flora and fauna shall be prepared and implemented in consultation with the State Forest and Wildlife Department. A copy of action plan shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office.	Being complied.
21	As per the Company Act, the CSR cost should be 2 % of average net profit of last three years. Hence CSR expenses should be as per the Company Act/Rule for the Socio Economic Development of the neighborhood Habitants which could be planned and executed by the Project Proponent more systematically based on the 'Need based door to door survey' by established Social Institutes/Workers. The report shall be submitted to the Ministry of Environment, Forest and Climate Change and its Regional Office on six monthly basis.	Being complied. The CSR Expenditure reported during the financial year: FY 2023-24 : Rs 5.85 Cr 2024-25 : Rs 8.37 Cr
22	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Agreed upon.
23	Measures should be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. should be provided with ear plugs/muffs.	Noise levels are monitored and reports submitted to MoEF &CC. Workers engaged in operations of HEMM, etc. are provided with ear plugs/muffs.
24	Industrial waste water (workshop and waste water from the mine) should be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May, 1993 and 31 st December, 1993 or as amended from time to time. Oil and grease trap should be installed before discharge of workshop effluents.	Being complied. The waste water generated from Mineral Separation Plant is taken to storage Pond No.I. After settling of slime in the pond, the water is recycled for reuse in the same plant. The monitoring results of liquid effluent to Pond No.I are regularly evaluated. From the monitoring data, it is seen that all the parameters are within the permissible limit.

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**IREL (India) Limited****Six Monthly Compliance Report (April 2025 to September 2025)**

25	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.	Being complied. Personnel working in dusty areas are providing PPE's and are wearing protective respiratory devices and they are also regularly provided with adequate training and information on safety and health aspects.
26	A separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Complied. Environment Management Cell is constituted and functioning. In addition, Environment Management Review meetings are being conducted on quarterly basis to review of the progress of requirements of Environment Management system as per ISO 14001: 2015.
27	The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to Ministry and its Regional Office.	Being complied The year wise environmental protection measures expenditure reported during the financial year: FY 2023-24 : Rs 4.99 Cr 2024-25 : Rs 0.62 Cr
28	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.	Being complied
29	The project Proponent shall submit six monthly reports on the status of the implementation of the stipulated environmental safeguards to the Ministry of Environment, Forest and Climate Change, its Regional Office, Central Pollution Control Board and State Pollution Control Board.	Six monthly reports on the status of the implementation of the stipulated environmental safeguards are being submitted to the MoEF & CC, Regional office, BBSR and SPCB.
30	The Regional Office of this Ministry shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer(s) of the Regional Office by furnishing the requisite data/ information / monitoring reports.	Agreed upon.
31	A copy of clearance letter will be marked to concerned Panchayat/ local NGO, if any, from whom suggestion/ representation has been received while processing the proposal.	Complied
32	State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and Collector's office/ Tehsildar's Office for 30 days.	Yes complied
33	The Project authorities should advertise at least in two local newspaper widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of	Yes complied. i.e Advertisd in English new paper: Times of India on



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	the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment, Forest and Climate Change at www.environmentclearance.nic.in/ parivesh.nic.in and a copy of the same should be forwarded to the Regional Office.	18.01.2019 & Odia daily news paper on 17.01.2019
34	The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environmental protection.	Agreed upon
35	Concealing factual data or submission of face/ 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.	Agreed upon
36	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 Of Odisha and any other Court of Law relating to the subject matter.	Agreed upon
37	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.	Agreed upon

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आईआरईएल (इंडिया) लिमिटेड IREL (India) Limited

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



ISO 9001:2015 & ISO 14001:2015 Company

TS/ENVR/ EC/REEP/

4th November 2025

To,
The Additional Principal Chief Conservator of Forests,
Government of India,
Ministry of Environment & Forests(MoEF),
Eastern Regional Office (Eastern Zone),
A/3, Chandrasekharapur, Bhubaneswar-751 023.

Dear Sir,

Sub. - Half-yearly progress report on Rare Earth Extraction Plant (REEP)(Earlier named MoPP)

Ref.- i. MoEF letter no.11015/348/2009-IA.II (M) dated 9th February 2011.
ii. Our compliance report TS/ENVR/05/2333A dated 25th May 2018.

With reference to above, we are herewith enclosing the compliance report for REEP (Earlier named MoPP) operation for the period April 2025 to September 2025 for your information please.

As advised, we are submitted the soft copy in PDF to email ID – roez.bsr-mef@nic.in for kind information.

With regards.

Yours truly,

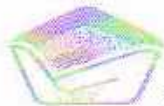
For IREL (India) Limited

(C.V.R. Murty)
GM & Head, OSCOM

W. K. C.

S. K. S.

K. S. S.

**Format for filling up of Compliance report****Annexure-1**

Name of the project: 1. Rare Earth Extraction Plant (earlier named MoPP) of OSCOM, IREL (India) Limited

Clearance letters No and Date: i. MoEF letter no. 11015/348/2009-IA.II (M) dated 9th February 2011 for REEP (Earlier named as MoPP)

Period of Compliance Report: **April 2025 to September 2025**

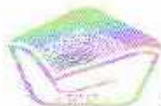
6A. Specific Conditions	Compliances
(i) The project proponent shall obtain prior Consent to Establish and Consent to Operate for the project from the State Pollution Control Board, Orissa and shall effectively implement all the conditions stipulated therein.	Consent to Operate Order No.2794 has obtained vide OSPCB letter No.6784 dated 30 March 2025 for REEP which is having validity upto 31 st March 2026. All the stipulated conditions are being implemented.
(ii) The project proponent shall ensure that no natural watercourse and/or water resources shall be obstructed due to any operations of the project.	No natural water course/ water resource has been obstructed during trial operation of REEP.
(iii) The existing slurry pipeline shall be used and no new pipeline shall be laid through the CRZ area. The discharge shall also be made through the existing pipeline. No new activity relating to the project shall be undertaken in CRZ area without obtaining requisite prior clearance under the CRZ Notification, 2011.	No new pipeline will be laid through the CRZ area and no new activity relating to the project will be undertaken in CRZ area
(iv) No ash/waste shall be discharged or dumped in the CRZ area.	Ash/waste is not dumped / discharged in CRZ area. Fly Ash are being dumped in low lying mined out area.
(v) The project proponent shall develop effective emergency response procedure to ensure appropriate risk management measures in the public domain, If any, due to the project.	Emergency Preparedness & Response and Distasted Management Plan to ensure appropriate risk management measures in the public domain is prepared and submitted to MoEF&CC, Central Regional Office, and Bhubaneswar vide our letter No.TS/ENVR/05G/5601A dated 6 th October 2017.
(vi) The AERB clearance for the site as applicable shall be obtained before starting any construction work and a copy of the same shall be provided to the Ministry of Environment and Forests and its Regional office located at Bhubaneswar.	We have obtained AERB clearance for setting up of REEP (copy already submitted vide our letter No.TS/ENVR/05/ OSCOM/10801A dated 26 th December 2011).
(vii) Effective safeguard measures such as regular water sprinkling shall be carried out in critical areas prone to air pollution and having high levels of particulate matter such as loading and unloading point and all transfer points. Extensive water sprinkling shall be carried out on roads. It should be ensured that the Ambient Air Quality parameters conform to the norms prescribed by the Central Pollution Control Board in this regard.	Water sprinkling is being carried out for existing operations for suppression of dust. Suitable ventilation arrangements have been provided at critical air pollution prone areas. Air Quality Monitoring (AQM) stations: AQM monitoring is being carried out by M/s ITS Testing Laboratory Private Limited., Noida (U.P), a NABL accredited & MoEF&CC authorized agency, at five stations Mining area (south & north), IREL Colony, Bada Arjipalli & Kanamana and in plant area on regular basis. The data for the period April 2025

Six Monthly Compliance Report (April 2025 to September 2025)

	to September 2025 is enclosed in Annexure-2. From the monitoring data it is seen that the PM10 levels are within the norm of 100 $\mu\text{g}/\text{m}^3$ and PM2.5 levels are within the norm of 60 $\mu\text{g}/\text{m}^3$.
(viii) Regular monitoring of conventional gaseous pollutants, radioactive pollutants in the air as well in the discharged water shall be monitored regularly as per AERB standards.	Monitoring of gaseous pollutants, radioactive pollutants in the air and treated effluent are regularly monitored and AERB standards are maintained during Plant operation. The monitoring report on Stack gas emission, radioactivity levels and for treated effluent for the period April 2025 to September 2025 are enclosed in Annexure-2 respectively and are well within norms.
(ix) A Disaster Management Plan and Emergency Preparedness Plan shall be prepared and put in place as per the norms of AERB. Regular mock drills shall be undertaken and based on the same, any modification required, if any, shall also be incorporated.	Emergency Preparedness & Response and Distasted Management Plan is prepared in line with AERB norms submitted to MoEF&CC, Central Regional Office, Bhubaneswar vide our letter No.TS/ENVR/05G/5601A dated 6th October 2017. Regular mock drills are conducted.
(x) The radioactive waste, if any shall be managed as per the norms prescribed by the AERB.	The radioactive waste management is being carried out as per the norms prescribed by AERB.
(xi) Plantation including a green belt of at least 7.5m width all around the plant shall be developed by planting the native species in consultation with the local DFO/ Agriculture Department.	Plantation activity were regularly being carried out in mined out areas & inside plant & housing colony areas of OSCOM & REEP. The details of plantation activities, carried out at mining area, plant & Housing Colony area along with photographs of the plantation in plant area (including plantation in 7.5 m width boundary) & mining area were submitted to MoEF&CC, Central Regional Office, Bhubaneswar vide our letter No.TS/ENVR/05G/5601A dated 6 th October 2017.
(xii) The project authority shall implement suitable conservation measures to augment ground water resources in the area in consultation with the Regional Director, Central Ground Water Board.	Implementation of Rain Water harvesting & construction of artificial recharge structures in IREL Plant site as well as in Housing Colony have already been taken up in consultation with the Regional Director, Central Ground Water Board to augment the ground water resources in the area.
(xiii) Regular monitoring of ground water level and quality shall be carried out by establishing a network of existing wells and constructing new piezometers in and around the project area especially around the trenches to be used for storage of waste material generated in the processing plant. The periodic monitoring [(at least four times in a year- pre-monsoon (April-May), monsoon (August), post-monsoon (November) and winter (January); once in, each season)] shall be carried out in consultation with the State Ground Water Board/Central Ground Water Authority and the data thus collected may be sent regularly to the Ministry of Environment and Forests and its Regional Office Bhubaneswar, the	Ground water monitoring is regularly carried out inside OSCOM on monthly basis and around OSCOM (from local villages) on quarterly basis in a year and half yearly reports are sent to the Regional Office, Ministry of Environment and Forests, Bhubaneswar regularly. The monitoring report for the period April 2025 to September 2025 is enclosed as in Annexure-2. Commercial production of REEP is initiated from April 2015 onwards. Periodic monitoring of ground water is under progress and the monitoring data is being sent to the Ministry of Environment and Forests and its Regional Office Bhubaneswar. Corrective measures shall be immediately taken if it is observed that the groundwater table and quality is getting affected due to the REEP operation.

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Six Monthly Compliance Report (April 2025 to September 2025)

Regional Director, Central Ground Water Board. If at any stage, it is observed that the groundwater table and quality is getting affected due to the project activity, necessary corrective measures shall be carried out.	
(xiv) The project proponent shall obtain necessary prior permission of the competent authorities for drawl of requisite quantity of water (surface water and groundwater) required for the project.	The existing two numbers of bore wells of Thorium Plant are used for REEP for which NOC has been obtained in 2016.
(xv) Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.	Implementation of Rain Water harvesting & construction of artificial recharge structures in IREL Plant site as well as in Housing Colony have already been taken up in consultation with the Regional Director, Central Ground Water Board to augment the ground water resources in the area.
(xvi) Monitoring of background radiation levels in water, soil and ambient air should be carried out periodically in the study area (core and buffer zone) of the project through an expert agency like Health Physics Division of Bhaba Atomic Research Centre (BARC).	Monitoring of background radiation levels in water, soil and ambient air were carried out in the study area (core and buffer zone) of REEP by Health Physics Unit (HPU) of Bhaba Atomic Research Centre (BARC), stationed at OSCOM and results were incorporated in EIA & EMP Report of REEP (submitted to MoEF, New Delhi vide our letter TS/ENVR/43A/6257A dated 12 th July 2010 and to MoEF, Regional Office, Bhubaneswar vide our letter No.TS/ENVR/43A/2555A dated 15 th March 2010. Periodic monitoring is being carried out regularly by HPU during REEP operation and reports are regularly submitted to MoEF & to the Regional Office, Bhubaneswar. The monitoring report on radiation levels during the period April 2025 to September 2025 is enclosed in Annexure-2.
(xvii) Sewage treatment plant shall be installed for the colony. ETP shall also be provided for the workshop and the wastewater generated during the processing process. Discharges from the treatment plant and settling pits should be constantly monitored for concentration of radio nuclides.	Installation of STP having capacity 0.6MLD /600KLD has been completed and functioning. All the effluents are being monitored as per OSCPB & AERB norms.
(xviii) Sludge from the treatment plant and settling pit should be transported in safe containment.	Sludge from the effluent treatment plant and settling pit are transported to RCC Trenches as per AERB recommendation.
(xix) The project authorities should undertake sample survey to generate data on pre-project community health status within a radius of 1 km from the proposed project.	As OSCOM is an existing unit, health survey of nearby village population is being regularly carried out and record is maintained. Regular employees & Contractual Workers are subjected to initial & periodic Medical Examinations as per Statutory guidelines and records maintained at Medical Department; total cases attended during the year 2024 are 7438. Villagers of adjoining areas are provided medical treatment facilities on regular basis through Family Health Clinic & Occupational Health Centre & record maintained, total cases attended during the year 2024 are 5462. The annual disease

*K. Balakrishna**S. Balakrishna*



	profile of the local village & employee's area is sent to the MoEF, New Delhi as well as to the Regional Office, MoEF, and Bhubaneswar along with half yearly compliance report.
(xx) Occupational health surveillance program of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed. Health records of the workers shall be maintained.	Occupational health surveillance program of the workers are being carried out periodically to observe any contractions due to exposure to dust/radiation and corrective measures are being taken. The same practice is being followed for the employees who are working in REEP and record is maintained. The annual disease profile of the local village & employee's area is enclosed herewith as Annexure-2,
(xxi) Pre-placement medical examination and periodical medical examination of the workers engaged in the project shall be carried out and records maintained. For the purpose, schedule of health examination of the workers should be drawn and followed accordingly.	Pre-placement medical examination and periodical medical examination of the workers are regularly carried out as per Mining Rules & AERB Rules for the employees following schedule of health examination and record is maintained.
(xxii) The plants growing in the area, soil invertebrate animals and local agricultural produce should be analysed to check the buildup of radioactivity levels, if any.	The report on radioactivity levels in plants growing in the area, soil samples for local agricultural produce, carried out by Health Physic Unit, Bhava Atomic Research Center, stationed at OSCOM was submitted to MoEF & CC, Central Regional Office, Bhubaneswar vide our letter No.TS/ENVR/05G/5601A dated 6 th October 2017.
(xxiii) The project proponent shall have an emergency response plan to ensure that all potentially affected people understand the possible causes and consequences of radiation and other project related activities.	Emergency Preparedness Plan is already available. The possible causes and consequences of radiation and other related activities have been identified and necessary action for remedy of the same has been mentioned.
(xxiv) The project proponent shall take all precautionary measures during mining operation for conservation and protection of flora and endangered fauna namely olive ridley turtle etc. spotted in the study area. Action plan for conservation of flora and fauna prepared shall be implemented in consultation with the State Forest and Wildlife Department. All the safeguard measures brought /out in the Wildlife Conservation Plan so approved specific to this project site shall be effectively implemented. Necessary allocation of funds for implementation of the conservation plan shall be made and the funds so allocated shall be included in the project cost. A copy of action plan shall be submitted to the Ministry of Environment and Forests and its Regional Office, Bhubaneswar.	All the precautionary measures during mining operation for conservation and protection of flora and fauna are being carried out. The mining is open cast type. After separation of heavy minerals, the mined out area is simultaneously back filled by the reject sand. The mined out area is leveled to near original topography and left for one year for sand stabilization. After one year, the area is planted with suitable local species e.g. Casurina, Cashew nut. Plantation is taken by giving the area by way of offering a contract to private contractor/ Co-operative Society of the local villages. The growth of herbaceous trees/creepers further stabilizes the sand and the ecological conditions are restored back. The biological report on flora and, fauna, duly authenticated by PCCF & WLW, separately for core and buffer zone considering 10 km from mine lease boundary was furnished in Annexure- 23 in EIA & EMP Report. As per approved plan, Rs. 46.0 lakhs has already been paid as per advice of Divisional Forest Officer (D.F.O.), Berhampur. Odisha Forest Department is taking

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Six Monthly Compliance Report (April 2025 to September 2025)

	necessary measures for conservation of sea turtles as per the approved plan. We are also providing necessary essential items/supports, as advised by D.F.O., Berhampur, during the breeding activity of Olive Ridley sea turtles in every year.
(xxv) Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project.	Most of the labourers engaged for construction work were belonging to nearby villages. However, for outside labourers, the Contractor as well as IREL provided necessary facilities like fuel for cooking, toilets, safe drinking water, change room etc. Medical facilities and safety appliances were provided to all the contractual labourers. The temporary housing sheds were removed after the completion of the project.
6B. General Conditions	
(i) No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and Forests.	Expansion or modification of REEP will be carried out only after obtaining prior approval of the Ministry of Environment and Forests.
(ii) Four ambient air quality-monitoring stations should be established in the core zone as well as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e. PM ₁₀), NO _x and SO ₂ monitoring. Location of the stations should be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets and frequency of monitoring should be undertaken in consultation with the State Pollution Control Board.	Ambient air quality monitoring is already carried out in five permanent stations, thrice in a month, around IREL and one spot inside plant premises, monthly once basis which is in consultation with Odisha State Pollution Control Board. The monitoring results for the period April 2025 to September 2025 are enclosed in Annexure-2 for ready reference please.
(iii) Data on ambient air quality RSPM (Particulate matter with size less than 10 micron i.e., PM ₁₀), NO _x and SO ₂ should be regularly submitted to the Ministry of Environment and Forests including its Regional office located at Bhubaneswar and the State Pollution Control Board / Central Pollution Control Board once in six months.	Ambient air quality with respect to parameters RSPM (PM ₁₀), NO _x and SO ₂ are regularly monitored and submitted to Odisha State Pollution Control Board once in a month and to the Regional office, Ministry of Environment and Forests, Bhubaneswar vide half yearly compliance report.
(iv) Measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in operations of HEMM, etc. shall be provided with ear plugs / muffs.	Noise levels are regularly monitored and submitted to the Regional office, Ministry of Environment and Forests, Bhubaneswar. Personnel engaged in noisy areas are provided with ear plugs / muffs. The same practice will also be followed for REEP operation. The monitoring data on noise level is enclosed in Annexure-2.

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(v) Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December, 1993 or as amended from time to time. The treated wastewater shall be utilized for plantation purpose.	After re-engineering for effective utilization of water, 15-20 m ³ /day of treated effluent is generated from REEP operation, after conforming to the prescribed standards, the same is used for plantation & reuse in MSP.
(vi) 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. Occupational health surveillance program of the workers should be undertaken periodically to observe any contractions due to exposure to dust and take corrective measures, if needed.	Personnel working in dusty areas are provided appropriate protective respiratory devices such as nose masks, goggles. Adequate training and information on safety and health aspects are regularly provided to all the employees of OSCOM & REEP.
(vii) Separate environmental management cell with suitable qualified personnel should be set-up under the control of a Senior Executive, who will report directly to the Head of the Organization.	Environment Management Cell is constituted and functioning. In addition, quarterly Environment Management Review meetings are being conducted to carry out to review the progress of requirements of Environment Management system as per ISO 14001:2015.
(viii) The project authorities should inform to the Regional Office located at Bhubaneswar regarding date of financial closures and final approval of the project by the concerned authorities and the date of start of land development work.	Date of final approval of the Project: 25 th August 2011 Date of start of land development work: 15 th May 2011.
(ix) The funds earmarked for environmental protection measures should be kept in separate account and should not be diverted for other purpose. Year wise expenditure should be reported to the Ministry and its Regional Office located at Bhubaneswar.	Fund has already been allocated to meet the expenditures for protection and maintaining the environmental safeguards in respect of existing operations and the year wise expenditure is regularly informed to the Regional Office, MoEF, Bhubaneswar. The same practice will be followed for REEP operation also.
(x) The Regional Office of this Ministry located at Bhubaneswar shall monitor compliance of the stipulated conditions. The project authorities should extend full cooperation to the officer (s) of the Regional Office by furnishing the requisite data / information / monitoring reports.	Co-operation will be fully extended to the officials of Regional Office, MoEF, Bhubaneswar and all the information/data shall be provided as per requirement.

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Six Monthly Compliance Report (April 2025 to September 2025)

<p>(xi) The project proponent shall submit six monthly reports on the status of compliance of the stipulated environmental clearance conditions including results of monitored data (both In hard copies as well as by e-mail) to the Ministry of Environment and Forests, its Regional Office Bhubaneswar, the respective Zonal Office of Central Pollution Control Board, the State Pollution Control Board. The proponent shall upload the status of compliance of the environmental clearance conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar, the respective Zonal Office of Central Pollution Control Board and the State Pollution Control Board.</p>	<p>Six monthly compliance report along with monitoring data as per the conditions stipulated in the environmental clearance letter will be regularly provided to the MoEF, its Regional Office Bhubaneswar, Odisha State Pollution Control Board. Environmental Statement report is being displayed in IREL website and the same will be updated periodically. The compliance reports and monitoring data will be displayed in IREL website and the same will be updated periodically.</p>
<p>(xii) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the Company by the proponent.</p>	<p>The copy of the clearance letter was sent to the Panchayat of villages e.g. Kalipalli, Arjipalli, Kanamana, Zilla Parishad, District Industries Office etc. Copy of the above letter was sent to the Regional Office, MoEF, and Bhubaneswar for information. The clearance letter is put on the website of IREL.</p>
<p>(xiii) The State Pollution Control Board should display a copy of the clearance letter at the Regional office, District Industry Centre and the Collector's office/ Tehsildar's Office for 30 days.</p>	<p>The Regional Officer of Odisha State Pollution Control Board informed during discussion that necessary action was taken in this regard.</p>
<p>(xiv) The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently shall also be put on the website of the company along, with the status of compliance of environmental clearance conditions and shall also be sent to the Regional Office of the Ministry of Environment and Forests, Bhubaneswar by e-mail.</p>	<p>The environmental statement for each financial year ending 31st March for existing operations of REEP is prepared and submitted in Form-V to the Odisha State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended thereon. It is also uploaded in IREL website along with the status of compliance of environmental clearance conditions.</p>

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Six Monthly Compliance Report (April 2025 to September 2025)

xv) The project authorities should advertise at least in two local newspapers widely circulated, one of which shall be in the vernacular language of the locality concerned, within 7 days of the issue of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and also at web site of the Ministry of Environment and Forests at http://envfor.nic.in and a copy of the same should be forwarded to the Regional Office	The matter regarding issue of the environmental clearance letter for setting up of a Monazite Processing Plant within the existing OSCOM premises was published in two local daily newspapers i.e. in 'Indian Express' & in 'Samaj' in English & Oriya languages respectively on 16 th February 2011. The copies of the same advertisements were sent to the Regional Office, MoEF, Bhubaneswar vide our letter No.TS/ENVVR/43A/2291A dated 18 th March 2011.
7. The Ministry or any other competent authority may alter/modify the above conditions or stipulate any further condition in the interest of environment protection	Agreed upon.
8. Failure to comply with any of the conditions mentioned above may result in withdrawal of this clearance and attract action under the provisions of the Environment (Protection) Act, 1986.	Agreed upon.
9. The above conditions will be enforced inter-alia, under the provision the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention and Control of Pollution) Act, 1981, the Environment (Protection) Act, 1986 and the Public Liability Insurance Act, 1991 along with their amendments and rule made there under and also any other orders passed by the Hon'ble Supreme Court of India/High Court of Orissa and any other Court of Law relating to subject matter.	Agreed upon.

K. Das

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आईआरईएल (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 Company

TS/ENVR/SWDP/

4th November 2025

To,
The Additional Principal Chief Conservator of Forests,
Government of India,
Ministry of Environment, Forests & Climate Change (MoEF&CC),
Eastern Regional Office (Eastern Zone),
A/3, Chandrasekharpur, Bhubaneswar-751 023.

Dear Sir,

Sub. - Half-yearly progress report on Sea Water Desalination Plant (SWDP).

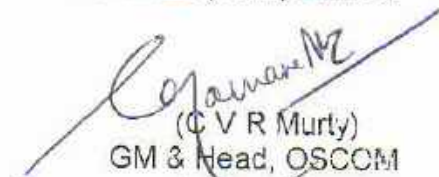

Ref.- i. CRZ clearance vide MoEF&CC letter No. 11-41/2015-IA-III dated 16-08-2018.
ii. MoEF&CC Reginal Office letter No.101-1066/EPE/753 dated 24.04.2019.

This has reference to the above subject & references; we are herewith enclosing the compliance report for Sea Water Desalination Plant (SWDP) operation for the period April 2025 to September 2025 for kind information.

As advised, we are submitting the soft copy in PDF to the email ID -- roez.bsr-mef@nic.in for kind information.

With regards.

Yours truly,
For IREL (India) Limited


(C V R Murty)
GM & Head, OSCCM


पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धिविनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028

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IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

Format for filling up of Compliance report

Annexure-1

Name of the project: Sea Water Desalination Plant (SWDP).

Clearance letters No and Date: i. CRZ clearance vide MoEF&CC letter No. 11-41/2015-IA-III dtd 16-08-2018.

ii. MoEF &CC Regional Office letter No.101-1066/EPE/753 dated 24.04.2019.

Period of Compliance Report: **April 2025 to September 2025**

Sr. No.	Condition	Compliance
PART-A	SPECIFIC CONDITIONS	
i.	The project proponent shall ensure that the guidelines for building and construction projects issued vide this Ministry's OM No.19-2/2013-IA.III dated 9th June, 2015.1 are followed to ensure sustainable environmental management.	All guidelines for building and Construction projects are followed to ensure sustainable environmental management.
ii.	The project activity shall be carried out strictly be as per the provisions of CRZ Notification, 2011, and shall not affect the coastal ecology of the area including flora and fauna.	Yes, Noted please.
iii.	The Project Proponent shall ensure that there is no destruction of mangroves during the construction as well as the operation phase of the project.	There are no mangroves in the proposed project site.
iv.	No radiation related discharge shall be released in the coastal area including the Sea.	Desalination plant has no radiation linkage.
v.	There shall be no dressing or alteration of the sand dunes and natural features, including landscape changes for beautification, recreation and other such purpose.	Activities like dressing or alteration of the sand dunes etc are not involved.
vi.	All conditions/recommendations stipulated by the Odisha Coastal Zone Management Authority (OCZMA) vide their letter No 64/OCZMA dated 25.08.2015, shall strictly be complied with, as may be applicable.	Yes, agreed upon.
vii.	The project proponent shall obtain all necessary clearances/ permission from the concerned authorities as applicable.	Yes, agreed upon.
viii.	Solid waste shall be managed as per Solid Wastes Management Rules, 2016.	Yes, agreed upon.
ix.	Consent to Establish' as may be applicable, shall be obtained from State Pollution Control Board under the Air (Prevention and Control of Pollution) Act, 1981 and the Water (Prevention and Control of Pollution) Act, 1974.	Complied. CTE already obtained. CTO no: 4033 dated 30.03.2025 is valid upto 31.03.2028
x.	All waste (liquid and solid) arising from the proposed development will be disposed of as per the norms prescribed by State Pollution Control Board. There shall not be any disposal of untreated effluent into the sea/coastal water bodies.	Yes, agreed upon.

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Six Monthly Compliance Report (April 2025 to September 2025)

Sr. No.	Condition	Compliance
xi.	No Permanent labour camp, machinery and material storage shall be allowed in CRZ area.	Yes, agreed upon.
xii.	There shall no ground water drawl within CRZ without prior approval of the Central Ground Water Authority.	Yes, agreed upon.
xiii.	Disposal of muck during construction phase should not create any adverse effect on the neighbouring communities and be disposed taking the necessary precautions for general safety and health aspects of people, only in approved sites with the approval of competent authority	There are no neighbouring communities nearby & muck during construction phase were disposed taking necessary precautions for general safety & health aspects of people.
PART-B	GENERAL CONDITION	
i.	A copy of the clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The Clearance letter shall also be displayed at the Regional Office, District Industries centre and Collector's Office/ Tehsildar's office for 30 days.	Copy of Clearance letter provided to OSPCB.
ii.	The funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.	Yes, agreed upon. The Environmental protection measures were taken for all functions of OSCOM and shall be taken once the desalination plant is in operation.
iii.	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.	Yes, agreed upon.
iv.	The above stipulations would be enforced among others under the provisions of the Water (Prevention and Control of Pollution) Act, 1974, the Air (Prevention and control of Pollution) Act, 1981, the Environment (Protection) Act, 1986, the Public liability (Insurance) Act, 1991, the EIA Notification, 2006 and the CRZ Notification, 2011.	Yes, agreed upon.
v.	Full co-operation shall be extended to the officials from the Regional Office of MoEF&CC, during monitoring of implementation of environmental safeguards stipulated. It shall be ensured that documents/data sought pertinent is made available to the monitoring team. A complete set of all the documents submitted to MoEF&CC shall be forwarded to the concerned Regional Office of MoEF&CC.	Yes & Co-operation will be fully extended to the officials of Regional Office, MoEF, Bhubaneswar and all the information/data shall be provided as per requirement.

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IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

Sr. No.	Condition	Compliance
vi.	In the case of any change(s) in the scope of the project, the project would require a fresh appraisal by this Ministry.	No change in scope of project.
vii.	The Ministry 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 Environmental (Protection) Act, 1986, to ensure effective implementation of the suggested safeguard measures in a time bound and satisfactory manner.	Yes, Noted please.
viii.	All other statutory clearances such as the approvals for storage of diesel from Chief Controller of Explosives, Fire Department, Civil Aviation Department, Forest Conservation Act, 1980 and Wildlife (Protection) Act, 1972 etc. shall be obtained, as applicable by project proponents from the respective competent authorities.	Yes, all statutory clearances which are applicable for SWDP shall be followed.
ix.	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 CRZ Clearance and copies of clearance letters are available with the State Pollution Control Board (SPCB) and may also be seen on the website of the Ministry of Environment, forest and Climate Change at http://www.envfor.nic.in . The advertisement should be made within Seven days from the date of receipt of the Clearance letter and a copy of the same should be forwarded to the concerned Regional Office of this Ministry	Complied.

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IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

4	This 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.	Yes, Noted please.
5	Any appeal against this 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.	Yes, Noted please.
6	A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zilla Parishad/Municipal Corporation, Urban Local Body and the Local NGO, if any, from whom suggestions/representations, if any, were received while processing the proposal. The clearance letter shall also be put on the website of the company by the proponent.	Copy of the clearance letter already sent to local Panchayats. The clearance letter is already displayed in IREL website.
7	The proponent shall upload the status of compliance of the stipulated conditions, including results of monitored data on their website and shall update the same periodically. It shall simultaneously be sent to the Regional Office of MoEF&CC, the respective Zonal Office of CPCB and the SPCB.	Yes, will be followed.
8	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of clearance conditions and shall also be sent to the respective Regional Office of the Ministry by e-mail.	Being complied regularly for all facilities of OSCOM, IREL & the environmental statement for each financial year ending 31st March in Form-V is submitted to OSPCB.

Details of Products / Facility: (FY 2025-26): April 2025 to September 2025:

Sl No.	Product/ Facility	Quantity/ Capacity
1	Sea Water Reverse Osmosis (SWRO)	294989 m ³
2	Multi Effect Desalination (MED)	10875 m ³
3	Discharge in to sea	896536 m ³
4	Total Sea Water Processed	1202400 m ³

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आईआरईएल (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 Company

TS/ENVR/EC /TDP/

4th November 2025

To,
The Additional Principal Chief Conservator of Forests,
Government of India,
Ministry of Environment & Forests,
Eastern Regional Office (Eastern Zone),
A/3, Chandrasekharpur, Bhubaneswar-751 023.

Dear Sir,

Sub. - Half-yearly progress report on Technology Demonstration Plant.

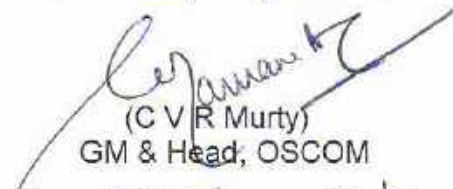

Ref.-i. MoEF letter no. J- 11011/44/2014-IA.II (I) Dated.24th Dec.2018

We are herewith enclosing the compliance report for operation of Technology Demonstration Plant with respect to the above referred EC letters for the period April 2025 to September 2025 for kind information please.

As advised, we are also submitting the soft-copy in PDF to email ID – roez.bsr-mef@nic.in for kind information.

With regards.

Yours truly,
For IREL (India) Limited


(C V R Murty)
GM & Head, OSCOM


पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धिविनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028

Regd. Office : Plot No. 1207, Veer Savarkar Marg, Near Siddhivinayak Temple, Prabhadevi, Mumbai - 400 028

फोन/Tel.: 022 - 2421 1630 / 2438 2048 फैक्स/ Fax : 022 - 2422 0236



IREL (India) Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

Format for filling up of Compliance report

Annexure-1

Name of the project: 1. Technology Demonstration Plant (TDP) IREL (India) Limited

Clearance letters No and Date: Compliance of various points raised by MoEF letter no. J-11011/44/2014-IA.II (I) Dated. 24th Dec. 2018

Period of Compliance Report: **April 2025 to September 2025**

Construction of TDP has started and CTO shall be applied once the plant construction work completed.

Specific Conditions:

S.No.	Description of Conditions	Status
1	The project proponent shall conduct study on Bio-Degradation of hazardous primary amines and volatile solvents used for solvent extraction through a reputed scientific organization within one year and recommendations of the study shall be implemented. Meanwhile the project proponent shall dispose the solids in the TSDF as per the CPCB guideline.	A project has been given to ICT, Mumbai for the treatment of waste water containing primary amine solvent using novel approach of combined hydrodynamic cavitations & oxidation process during 17.6.2019. The project aimed at to ensure degradation of primary amine solvent in effluent of 5m ³ /h. Project report prepared by ICT, Mumbai. Based on the recommendation, hydrodynamics cavitation reactor has been installed.

General Conditions:

S.No.	General Conditions:	Compliance
1	Statutory compliance	
i.	The recommendations of the approval Turtle Conservation Plan shall be implemented in consultation with the State Forest Department. The implementation report shall be furnished along with the six- monthly compliance report.	Being complied.
ii.	The project proponent shall obtain Consent to Establish/Operate under the provisions of Air (Prevention & Control of Pollution) Act, 1981 and the Water (Prevention & Control of Pollution) Act, 1974 from the Odisha State Pollution Control Board/Committee.	CTE has obtained from OSPCB. CTO has been applied and it is in process.

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IREL (India) Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

iii.	The project proponent shall obtain the necessary permission from the Central ground Water Authority, in case of drawl of ground water/ from the competent authority concerned in case of drawl of surface water required for the project.	The plant has not started yet & Permission shall be obtained.
iv.	The project proponent shall obtain authorization under the Hazardous and other Waste Management Rules, 2016 as amended from time to time.	The renewal of authorizations has been obtained vide letter no RO/HW-05/2013/3524 dated 30.08.2024 valid upto 31.03.2029 and same shall be used for TDP.
2	Air quality monitoring and preservation	
i.	The project proponent shall install 24x7 continuous emission monitoring system at process stacks to monitor stack emissions with respect to standards prescribed in Environment (Protection) Rules, 1986 as amended from time to time and connect the systems to SPCB and CPCB online servers and calibrated these systems from time to time according to equipment supplier specification through the labs recognized under Environment (Protection) Act, 1986 or NABL accredited laboratories.	The plant has not started & shall be complied once the plant starts.
ii.	The project proponent shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognized under Environment (Protection) Act, 1986.	Shall monitor fugitive emissions in the plant premises at least once in every quarter through labs recognized under Environment when plant starts operation.
iii.	The project proponent shall install continuous Ambient Air Quality monitoring systems for monitoring of communication/ criteria parameters relevant to the main pollutants released (e.g. PM ₁₀ and PM _{2.5} in reference to Pm emission, And SO ₂ and NO _x in reference to SO ₂ and NO _x emissions) within and outside the plant area at least at four locations (one within and three outside the plant area at an angle of 120° each), covering upwind and downwind directions.	Shall be complied once the plant starts.
iv.	The project proponent shall submit monthly report of continuous stack emission and ambient air quality monitoring along with results of manual stack monitoring and manual monitoring of air quality/fugitive emissions to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	Shall submit monthly report of continuous stack emission and ambient air quality monitoring once the plant is in operation.
v.	Appropriate Air Pollution Control (APC) systems	Air Pollution Control (APC)

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IREL (India) Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

	shall be provided at all the dust generating points including fugitive dust from all vulnerable sources, so as to comply with the prescribed stack emission and fugitive emission standards.	systems to be provided at all the dust generating points including fugitive dust from all vulnerable sources, so as to comply with the prescribed stack emission and fugitive emission standards.
vi.	The project proponent shall use leak proof trucks/dumpers for carrying ore and other raw materials and cover them with tarpaulin.	Yes, complied for other operations of OSCOM.
vii.	Wind breaking fence and chemical spraying shall be provided on the raw material stock piles.	Since plant has not started yet, same shall be complied.
viii.	The PP shall Design the ventilation system for adequate air changes as per ACGIH document for all tunnels, motor houses, Oil Cellars.	Since plant has not started yet, same shall be complied.
3.	Water quality monitoring and preservation	
i.	The project proponent shall install 24x7 continuous effluent monitoring system with respect to standards prescribed in Environment (Protection) Rules, 1986 as amended from time to time and connected to SPCB and CPCB online servers and calibrated these systems from time to time according to equipment supplier specification through labs recognized under Environment (Protection) Rules, 1986 or NABL accredited laboratories. (case to case basis small plants: Manual; Large plants: Continuous)	Procurement action for continuous effluent monitoring system has been initiated and Same shall be Installed.
ii.	The project proponent shall monitor regularly the ground water quality at least twice a year (pre and post monsoon) at sufficient numbers of piezometers/sampling wells in the plant and adjacent areas through labs recognized under Environment (Protection) Act, 1986 and NABL accredited laboratories.	Shall comply to the conditions.
iii.	The project proponent shall submit monthly summary report of continuous effluent monitoring and results of manual effluent testing and manual monitoring of ground water quality to Regional Office of MoEF&CC, Zonal office of CPCB and Regional Office of SPCB along with six-monthly monitoring report.	Shall comply to the conditions when plant starts.
iv.	The project proponent shall provide the slime disposal facility with impervious lining and collection wells for collection of seepage. The water collected from the slime pond shall be treated and recycled.	Same shall be complied once the plant has stated its operation.
v.	Adhere to 'Zero Liquid Discharge'	Shall be complied once the plant starts its operation.
vi.	Sewage Treatment Plant shall be provided for	Construction of STP is

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IREL (India) Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

	treatment of domestic waste water to meet the prescribed standards.	completed at housing colony.
vii.	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run-off.	Garland drains and collection pits are provided for each stock pile to arrest the run-off in the event of heavy rains and to check the water pollution due to surface run-off.
viii.	The project proponent shall practice rainwater harvesting to maximum possible extent.	Implementation of Rain Water harvesting & construction of artificial recharge structures in IREL Plant site as well as in Housing Colony have already been taken up.
ix.	The project proponent shall make efforts to minimize water consumption in the plant complex by segregation of used water, practicing cascade use and by recycling treated water.	Efforts shall be made to recycle most of the water.
4.	Noise monitoring and prevention	
i.	Noise level survey shall be carried as per the prescribed guidelines and report in this regard shall be submitted to Regional Officer of the Ministry as part of six-monthly compliance report.	Agreed upon, shall be complied.
ii.	The ambient noise levels should conform to the standards prescribed under E (P) A Rules, 1986 viz. 75 dB(A) during day time and 70 dB (A) during night time.	Agreed upon, shall be complied.
5.	Energy Conservation measures	
i.	Provide solar power generation on roof tops of buildings, for lighting of all common areas, street lights, parking around project area and maintain the same regularly.	Shall be complied.
ii.	Provide LED lights in the offices and residential areas.	LED lights were provided to offices and residential areas.
6.	Waste management	
i.	The waste oil, grease and other hazardous waste shall be disposed of as per the Hazardous & Other waste (Management & Transboundary Movement) Rules, 2016.	Same shall be complied once the plant has started its operation.
ii.	Kitchen waste shall be composted or converted to biogas for further use. <i>(to be decided on case to case basis depending on type and size of plant)</i>	Not applicable.
7.	Green Belt and EMP	
i.	Green belt shall be developed in an area equal to 33 % of the plant area with native tree species in accordance with CPCB guidelines. The greenbelt shall inter alia cover the entire periphery of the plant.	The details of plantation and green belt development are mentioned in Annexure-2.

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IREL (India) Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

ii.	The project proponent shall prepare GHG emissions inventory for the plant and shall submit a programme for reduction of the same including carbon sequestration and plantation.	Agreed upon
8.	Public hearing and Human health issues	
i.	Emergency preparedness plan based on the Hazard identification and Risk Assessment (HIRA) and Disaster Management Plan shall be implemented.	Agreed upon & same shall be complied.
ii.	The project proponent shall carry out heat stress analysis for the workmen who work in high temperature work zone and provide Personal Protection Equipment (PPE) as per the norms of Factory Act.	Personnel working shall be provided with appropriate protective respiratory devices such as nose masks, goggles. Adequate training and information on safety and health aspects are to be provided.
iii.	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, safe drinking water, medical health care, crèche etc. The housing may be in the form temporary structures to be dismantled/ removed after completion of the project.	Agreed & shall be complied.
iv.	Occupational health surveillance of the workers shall be done on a regular basis and records maintained as per the Factories Act.	Agreed & shall be complied. Occupational health surveillance of regular employees & Contractual Workers shall be done when plant shall be in operation.
9.	Corporate Environment Responsibility	
i.	The project proponent shall comply with the provisions contained in this Ministry's Om vide F.No. 22-65/2017-IA.III dated 1 st May 2018 as applicable, regarding Corporate Environment Responsibility.	Yes, Agreed upon
ii.	The company shall have a well laid down environmental policy duly approved by the Board of Directors. The environmental policy should prescribe for standard operating procedure to have proper checks and balances and to bring into focus any infringements/deviation/violation of the environmental/ forest/ wildlife norms/ conditions. The company shall	Being complied.

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IREL (India) Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

	have defined system of reporting infringements/deviation/violation of the environmental/ forest/ wildlife norms/ conditions and /or share holders/ stake holders. The copy of the board resolution in this regard shall be submitted to the MoEF&CC as a part of six- monthly report.	
iii.	A separate Environmental Cell both at the project and company head quarter level, with qualified personnel shall be set up under the control of senior Executive, who will directly report to the head of the organization.	Shall be Complied. Environment Management Cell is constituted and functioning. In addition, Environment Management Review meetings are being conducted on quarterly basis to carry out to review of the progress of requirements of Environment Management system as per ISO 14001:2015.
iv.	Action plan for implementing EMP and environmental conditions along with responsibility matrix of the company shall be prepared and shall be duly approved by competent authority. The year wise funds earmarked for environmental protection measures shall be kept in separate account and shall not be diverted for any other purpose. Year wise progress of implementation of action plan shall be reported to the Ministry / Regional Office along with the Six Monthly Compliance Report.	The year wise funds shall be earmarked for environmental protection measures are kept in separate account and are not diverted for any other purpose.
v.	Self-environmental audit shall be conducted annually. Every three years third party environmental audit shall be carried out.	Agreed upon.
vi.	All the recommendations made in the Charter on Corporate Responsibility for Environmental Protection (CREP) for the Mineral Beneficiation plants shall be implemented.	Yes, Agreed Upon.

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आईआरईएल (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 Company

TS/ENVR/EC /TP/

4th November 2025

To,
The Additional Principal Chief Conservator of Forests,
Government of India,
Ministry of Environment & Forests,
Eastern Regional Office (Eastern Zone),
A/3, Chandrasekharpur, Bhubaneswar-751 023.

Dear Sir,

Sub. - Half-yearly progress report on Thorium Section operations at OSCOM

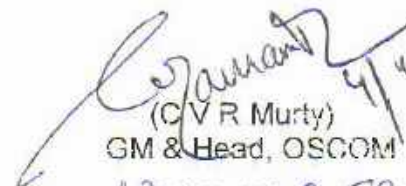
Ref.- i. MOE&F letter no.J-14011/5/91/IA-I dated 24th Sept'93
ii. MOE&F letter no.J-14011/5/91/IA-II dated 7th Apr'2000
iii. Our compliance report TS/ENVR/05/TP/4944A dated 23rd November 2013.

We are herewith enclosing the compliance report for operation of Thorium Section (merged with Rare Earths Extraction Plant) with respect to the above referred EC letters for the period April 2025 to September 2025 for kind information please.

As advised, we are submitting the soft-copy in PDF to email ID – roez.bsr-mef@nic.in for kind information.

With regards.

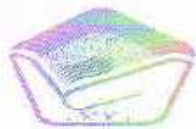
Yours truly,
For IREL (India) Limited


(C.V.R. Murty)
GM & Head, OSCOM
White field, Bhubaneswar.

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धिविनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028

Regd. Office : Plot No. 1207, Veer Savarkar Marg, Near Siddhivinayak Temple, Prabhadevi, Mumbai - 400 028

फोन/ Tel.: 022 - 2421 1630 / 2438 2048 फैक्स/ Fax : 022 - 2422 0236



IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

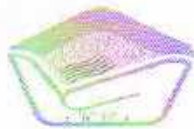
Name of the project: 1. Thorium Plant of OSCOM, IREL (India)Limited
Clearance letters No and Date: i. Letter no. J- 14011/5/91 /IA-I dtd. 24.9.93 & J-14011/5/91/IA-II dated 07.04.2000.

Period of Compliance Report: April 2025 to September 2025

No.	Description of Conditions	Status
1-i.	All the stipulations of Atomic Energy Regulatory Board (AERB) pertaining to safety and related aspects shall be implemented and it will be ensured that :- (a) Radioactive wastes (solids and semi-solids) are properly treated and disposed off after proper containment in accordance with the standards/guidelines prescribed by ICRP/AERB.	Thorium section is merged with REEP operation as a section from 2015 onwards. During the period all the radioactive wastes were treated, contained where-ever necessary & disposed off as per the plans submitted by OSCOM and approved by AERB. The plant has submitted necessary particulars of radioactive wastes disposed during the period: April 2025 to September 2025 to as per the Radioactive Waste Management Rules 1989.
	(b) Thorium and Uranium content in Sodium Nitrate to be disposed off through sale shall be regularly monitored and shall not exceed the limits prescribed by AERB.	No sodium nitrate solution was disposed off through sales during the period: April 2025 to September 2025. The sodium nitrate solution were stored in lined pond for natural evaporation & after evaporation, the sodium nitrate crystals were stored in RCC trenches.
	(c) The liquid effluents emanating from different processes are treated to conform to the standards prescribed by Central/State Pollution Control Board and International Commission for Radiological Protection (ICRP/AERB).	The radioactive liquid effluent mainly emanate from operation of Thorium Plant. The effluent is treated and after monitoring the same is pumped to neutralization tank and the supernatant is pumped to ETP discharge through the neutralization system of OSCOM. The Gross α & Gross β activity levels in the treated effluent are well within AERB prescribed limits 37.0 Bq/L and 370 Bq/L respectively during the period April 2025 to September 2025.

K. Balakrishnan

S. Balakrishnan



IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

No.	Description of Conditions	Status
1-ii	Adequate number of air quality monitoring stations should be set up keeping in view the direction of wind flow, sensitive receptors as well as where maximum ground level concentration is anticipated. Also the manual monitoring of stack emissions should be carried out at regular intervals.	<p>Air Quality Monitoring (AQM) stations: AQM monitoring is being carried out by M/s ITS Testing Laboratory Private Limited, Noida, U.P., a NABL accredited & MoEF & CC authorized agency, at five stations Mining area (south & north), IREL Colony, Bada Arjipalli & Kanamana and in plant area on regular basis. The data for the period: April 2025 to September 2025 is enclosed in Annexure-2. From the monitoring data it is seen that the PM_{10} levels are well within permissible norm of $100 \mu g/m^3$ and $PM_{2.5}$ levels are well within permissible norm of $60 \mu g/m^3$.</p> <p>Stack monitoring is being carried out for all the stacks of running plants. The monitoring results indicate that the Acid mist values in the stack emission from Thorium plant (merged with REEP) are well within the permissible norm of $50 mg/m^3$. The stack emission monitoring report is enclosed in Annexure-2.</p>
1-iii	The quality of liquid effluents should be regularly monitored. The treated effluents conforming to the prescribed standards should be utilized for development of green belt.	Being complied. The monitoring results of liquid effluent from Pond No.1(dredge pond) & ETP discharge during the period: April 2025 to September 2025 are given in Annexure-2. The water from Pond No.1(dredge pond) is reused for MSP operation & also for plantation development in mined out area.
1-iv	Radiation level at different locations of the plant should be regularly monitored and records maintained.	Being complied. A Health Physics Unit of Bhaba Atomic Research Center (BARC) is stationed at OSCOM and regular radiation monitoring is carried out in the plant and periodic reports are submitted to SARCOP/AERB, monitoring report enclosed in Annexure-2.
1-v	Health of occupational workers as well as population living in the proximity of the plant (5 Km) should be monitored and records maintained.	Regular employees & Contractual Workers are subjected to initial & periodic Medical Examinations as per Statutory guidelines and records maintained at Medial Department, total cases attended during 2024 are 7438. Villagers of adjoining areas are provided medical treatment facilities on regular basis through Family Health Clinic & Occupational Health Centre & record maintained, total cases attended during 2024 are 5462. The annual disease profile of the local village & employee's area is enclosed herewith as Annexure-2.

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IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

No.	Description of Conditions	Status
1-vi	The emergency power requirement will be met from the already installed DG sets (610 KVA) and no additional DG sets shall be installed.	Emergency power requirement is being met from the existing facilities. No additional equipment has been installed.
1-vii	The steam requirement will be met from the existing boiler sets and no additional boiler set shall be installed.	Steam generation capacity of 18 t/h Boiler is under operation to meet the steam requirement of Thorium Section which is merged with REEP.
1-viii	Necessary precautions should be taken in respect of Occupational workers in coal handling area of the boiler unit.	Water spraying is being carried out for suppression of dust. Personnel working in dusty areas are provided appropriate protective respiratory devices such as nose masks, goggles.
1-ix	A satisfactory comprehensive EIA report should be submitted by March 1994 incorporating all the suggestion / observations made during the presentation on rapid EIA report.	Complied
1-x	Action plan for implementation of the Environmental Management Plan relating to air, water, noise, solid wastes, social-economic aspects, green belt development and environmental surveillance shall be prepared and implemented as per schedule and report submitted to Ministry of Environment and Forests every six months.	Being complied as per EMP. Monitoring results on air, water, noise, soil etc. are enclosed in Annexure-2.
2.	A separate environment management cell with laboratory facilities and suitably qualified people should be set up.	Environment Management Cell is constituted and functioning. In addition, quarterly Environment Management Review meetings are being conducted to review the progress of requirements of Environment Management system as per ISO 14001: 2015.
3.	Adequate financial provisions should be made item-wise for implementation of the above provisions and there must be no diversion of such fund specified funds.	Being complied. During the year 2024-25, expenditure of Rs.8.99 Cr was made towards environmental up-gradation, pollution control and CSR activities. Financial provision for the year 2025-26 has already been made to meet the requirement.
4.	The stipulations could be modified, altered or additional incorporated if felt necessary by Ministry of Environment & Forests after reviewing the comprehensive EIA report to be submitted by the proponents.	Complied. The Comprehensive EIA & EMP report was prepared for OSCOM and Thorium Plant was prepared and submitted to MoEF, New, Delhi vide our letter No. TS/Envir/4669-A dated 26 th April 1994 to MoEF Regional Office (Eastern Zone), Bhubaneswar vide our letter No.TS/Envir/7401-A dated 24 th June 1994.

K. K. K.

S. S. S.



IREL(India)Limited, OSCOM

Six Monthly Compliance Report (April 2025 to September 2025)

No.	Description of Conditions	Status
5.	The stipulations will be implemented among others under the Water (Prevention & Control of Pollution) Act, 1974, the Air (Prevention & Control of Pollution) Act, 1981 and the Environment (Protection) Act, 1986.	Stipulations given by State Pollution Control Board, Odisha are complied with & monthly statements are being regularly submitted.

Signature

Signature



ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
Website: www.itslab.in, Email: itrlclab@gmail.com, info@itslab.in, contact@itslab.in
+91 9911659800, 9305780312, 09958849764



TEST REPORT			Report NO.- ITS/IREL-SE-02
Stack Emission Analysis			
Issue To		M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam,	
Sampling Location		REEP Stack -1(Attack plant)(ST-9),REEP Stack2-REChloride (Active plant)(ST-10)	
Sampling Done By		Mr.Suresh Pradhan	
Nature of sampling		Source emission	
Instrument used		Stack monitoring kit, Flue Gas Analyzer	
Sampling period		April 2025-sep-2025	
Parameter		Acid mist	
Frequency			Location
month	Week	ST-9	ST-10
Opril	2nd	4.2	5.4
	4th	4.8	5.2
May	2nd	4.4	5.1
	4th	4.5	5.4
June	2nd	4.4	5.6
	4th	4.8	5.2
July	2nd	4.5	5.6
	4th	4.8	5.2
August	2nd	4.4	5.8
	4th	4.4	5.3
Sep	2nd	4.3	5.4
	4th	4.3	5.5
Maximum		4.8	5.8
Minimum		4.3	5.2
Average		4.45	5.47
SD		0.19	0.22

Checke by 

OSPCB Permissible Limits- 50 mg/Nm³



Terms & Conditions :

1. Test reports are valid only for the samples tested in our laboratory. 2. Samples will destroyed as per quality policy.
3. Any complaints about the report should be communicated in writing within 7 days.
4. Total liability of our laboratory is limited to invoiced amount.



ITS TESTING LABORATORY PRIVATE LIMITED

Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)
 (An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)
 Website: www.itslab.in, Email: itrlab@gmail.com, info@itslab.in, contact@itslab.in
 +91 9911659800, 9305780312, 09958849764



TEST REPORT										Report NO.- ITS/IREL-SE-01				
Stack Emission Analysis														
Issue To		M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam, Odisha												
Samp-le Location		Boiler(ST-1), Main dryer(ST-2) , Shaft dryer-IIminite(ST-3) , Shaft dryer Rutile(ST-4), Sillimanite dryer(ST-5), Garnet FBD(ST-6),Zircon dryer(ST-7), RE mineral Up gradation section(ST-8), REEP Stack -1(Attack plant)(ST-9), REEP Stack2-REChloride (Active plant)(S10), Main FBD(ST-11),TDP (Boiler)-12												
Nature of sampling		Source emission												
Sampling Done By		Mr.Suresh Pradhan												
Instrument used		Stack monitoring kit, Flue Gas Analyzer												
Sampling Period		April 2025-sep-2025												
Parameter		Particulate matter												
Month	Date	ST-1	ST-2	ST-3	ST-4	ST-5	ST-6	ST-7	ST-8	ST-9	ST-10	ST-11	ST-12	
April	2nd	75.9	67.2	71.8	65.4	62	64.1	72.2	64.9	10.4	13.1	56.6	-	
	4th	72.6	65.2	73.1	65.1	70.1	61.8	73.5	70	11.9	11	56.9	-	
May	2nd	74.3	68.6	71.4	65.5	62.6	64.5	72.4	64.8	10.2	13.3	55.2	-	
	4th	72.5	65.8	72.4	66.3	70.2	62.5	75.6	70.2	11.8	11.4	56.3	-	
June	2nd	75.8	65.6	72.8	64.6	62.6	66.3	74.4	68.6	10.5	13.4	56.1	-	
	4th	73.7	67.4	71.9	66.8	69.6	62.4	72.3	69.2	12.4	10.5	55.9	-	
July	1st	75.5	65.2	72.4	64.3	62.1	66.5	74.8	68.6	10.2	13.7	56.8	71.5	
	4th	73.7	67.4	71.9	66.8	69.6	62.4	72.3	69.2	12.4	10.5	55.9	71.6	
August	1st	75.6	65.4	72.3	64	62.2	66.8	74.7	68.3	10.1	13.8	56.6	71.2	
	4th	73.8	67.6	71.2	66.7	69.8	62.3	72.1	69.9	12.2	10.3	55.7	71.2	
Sep	2nd	75.6	65.8	72.4	64.5	62.2	66.1	74.6	68.2	10.1	13.2	56.6	71.3	
	4th	73.8	67.2	71.4	65.6	69.2	62.3	72.4	69.1	12.3	10.8	55.4	71.1	
	Maximum	75.9	68.6	73.1	66.8	70.2	66.8	75.6	70.2	12.4	13.8	56.9	71.6	
	Minimum	72.5	65.2	71.2	64	62	61.8	72.1	64.8	10.1	10.3	55.2	71.1	
	Average	74.40	66.53	72.08	65.47	66.02	64.00	73.44	68.42	11.21	12.08	56.17	71.32	
	SD	1.24	1.15	0.58	1.01	3.91	1.95	1.30	1.79	1.02	1.43	0.56	0.19	
Checked By		Authorized Signatory												
OSPCB Permissible Limits- 150 mg/Nm3														



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TEST REPORT													
Ambient Air Quality Analysis											Report NO.- ITS/IREL-AAQ-05		
Issue To		M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam, Odisha											
Work Order		GEMC 51687709360706/07/SC-11684,Dated-19.11.2024											
Sampling Location		Badaaryapaili village-AS											
Sampling Done By		Mr.Suresh Pradhan											
Instrument Used		Respirable Dust Sampler, Fine Dust sampler, CO meter, benzene sampler											
Sampling Period		April 2025-sep-2025											
Month	Week	PM10	PM2.5	SOx	NOx	NH3	CO	Pb	O3	C6H6	Benzo	Ni	As
April	1st	79.4	34.9	7.92	13.1	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	73.5	32.3	7.71	10.9	<20	0.6	<0.1	10.9	<1.0	<0.1	<1.0	<1.0
	3rd	75.1	33.5	7.65	11.4	<20	0.63	<0.1	10.6	<1.0	<0.1	<1.0	<1.0
May	1st	72.4	36.5	8.2	11.8	<20	0.58	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	72.6	31.6	7.45	10.5	<20	0.66	<0.1	10.5	<1.0	<0.1	<1.0	<1.0
	3rd	75.5	34.3	7.89	12.2	<20	0.65	<0.1	10.8	<1.0	<0.1	<1.0	<1.0
June	1st	71.6	36.1	8.56	11	<20	0.56	<0.1	12.1	<1.0	<0.1	<1.0	<1.0
	2nd	73.1	32.2	7.65	10.6	<20	0.58	<0.1	10.8	<1.0	<0.1	<1.0	<1.0
	3rd	73.1	32.2	7.65	10.6	<20	0.58	<0.1	10.8	<1.0	<0.1	<1.0	<1.0
July	1st	70.7	36.8	8.45	11.2	<20	0.62	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	73.4	31.5	7.45	10.5	<20	0.65	<0.1	10.2	<1.0	<0.1	<1.0	<1.0
	3rd	73	34.6	7.85	10.8	<20	0.62	<0.1	10.9	<1.0	<0.1	<1.0	<1.0
August	1st	70.4	36.8	8.44	11.1	<20	0.66	<0.1	12.4	<1.0	<0.1	<1.0	<1.0
	2nd	72.3	31.6	7.45	10.54	<20	0.66	<0.1	10.8	<1.0	<0.1	<1.0	<1.0
	3rd	73.2	34.6	7.45	10.9	<20	0.64	<0.1	10.2	<1.0	<0.1	<1.0	<1.0
sep	1st	71.6	36.1	8.56	11	<20	0.56	<0.1	12.1	<1.0	<0.1	<1.0	<1.0
	2nd	73.3	31.2	7.5	10.1	<20	0.64	<0.1	10.2	<1.0	<0.1	<1.0	<1.0
	3rd	73.8	32.4	7.8	10.72	<20	0.62	<0.1	10.7	<1.0	<0.1	<1.0	<1.0
Maximum		79.4	36.8	8.56	13.1	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
Minimum		70.4	31.2	7.45	10.1	<20	0.56	<0.1	10.2	<1.0	<0.1	<1.0	<1.0
Average		73.222	33.84	7.87	11.05	<20	0.63	<0.1	11.26	<1.0	<0.1	<1.0	<1.0
SD		2.01	2.03	0.40	0.71	<20	0.04	<0.1	0.98	<1.0	<0.1	<1.0	<1.0
NAAQ Standard		80	80	100	60	1	6	400	180	1	20	5	4
<div>Checked By </div> <div></div>													

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TEST REPORT													
Ambient Air Quality Analysis											Report NO.- ITS/IREL-AAQ-04		
Issue To		M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam, Odisha											
Work Order		GEMC 51687709360706/07/SC-11684,Dated-19.11.2024											
Sampling Location		Kanamana village-A4											
Sampling Done By		Mr.Suresh Pradhan											
Instrument Used		Respirable Dust Sampler, Fine Dust sampler, CO meter, benzene sampler											
Sampling Period		April 2025-sep-2025											
Month	Week	PM10	PM2.5	SOx	NOx	NH3	CO	Pb	O3	C6H6	Benzo	Ni	As
April	1st	79.4	34.9	7.92	13.1	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	73.4	36.4	9.17	13.4	<20	0.64	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
	3rd	74.6	35.7	9.18	14.1	<20	0.61	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
May	1st	72.8	37.5	9.36	12.5	<20	0.72	<0.1	12.2	<1.0	<0.1	<1.0	<1.0
	2nd	72.9	35.8	9.08	13.5	<20	0.63	<0.1	12.2	<1.0	<0.1	<1.0	<1.0
	3rd	74.4	34.3	9.11	14.5	<20	0.58	<0.1	12.4	<1.0	<0.1	<1.0	<1.0
June	1st	72.1	36.8	9.54	12.8	<20	0.62	<0.1	11.4	<1.0	<0.1	<1.0	<1.0
	2nd	74.5	36.6	9.14	13.6	<20	0.58	<0.1	12.7	<1.0	<0.1	<1.0	<1.0
	3rd	74.5	36.6	9.14	13.6	<20	0.58	<0.1	12.7	<1.0	<0.1	<1.0	<1.0
July	1st	72.5	35.4	9.62	12.1	<20	0.56	<0.1	11.2	<1.0	<0.1	<1.0	<1.0
	2nd	74.4	36.5	9.32	13.4	<20	0.62	<0.1	12.6	<1.0	<0.1	<1.0	<1.0
	3rd	74.8	36.6	9.18	13.2	<20	0.56	<0.1	12.2	<1.0	<0.1	<1.0	<1.0
August	1st	72.7	35.2	9.68	12.2	<20	0.56	<0.1	11.9	<1.0	<0.1	<1.0	<1.0
	2nd	72.5	36.4	9.45	13.56	<20	0.68	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	3rd	74.4	36.3	9.16	13.1	<20	0.54	<0.1	12.6	<1.0	<0.1	<1.0	<1.0
sep	1st	72.1	36.8	9.54	12.8	<20	0.62	<0.1	11.4	<1.0	<0.1	<1.0	<1.0
	2nd	74.65	36.4	9.2	13.4	<20	0.61	<0.1	12.3	<1.0	<0.1	<1.0	<1.0
	3rd	74.6	36.8	9.2	13.8	<20	0.62	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
Maximum		79.4	37.5	9.68	14.5	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
Minimum		72.1	34.3	7.92	12.1	<20	0.54	<0.1	11.2	<1.0	<0.1	<1.0	<1.0
Average		73.958	36.16	9.22	13.26	<20	0.62	<0.1	12.30	<1.0	<0.1	<1.0	<1.0
SD		1.69	0.80	0.38	0.62	<20	0.05	<0.1	0.52	<1.0	<0.1	<1.0	<1.0
NAAQ Standard		80	80	100	60	1	6	400	180	1	20	5	4
<div>Checked By </div> <div></div>													

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TEST REPORT													
Ambient Air Quality Analysis										Report NO.- ITS/IREL-AAQ-03			
Issue To		M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam, Odisha											
Work Order		GEMC 51687709360706/07/SC-11684,Dated-19.11.2024											
Sampling Location		IREL Community centre-A3											
Sampling Done By		Mr.Suresh Pradhan											
Instrument Used		Respirable Dust Sampler, Fine Dust sampler, CO meter, benzene sampler											
Sampling Period		April 2025-sep-2025											
Month	Week	PM10	PM2.5	SOx	NOx	NH3	CO	Pb	O3	C6H6	Benzo	Ni	As
April	1st	79.4	34.9	7.92	13.1	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	80.7	36.9	8.08	13.25	<20	0.72	<0.1	13.7	<1.0	<0.1	<1.0	<1.0
	3rd	81.2	34.6	7.98	13.5	<20	0.78	<0.1	13.1	<1.0	<0.1	<1.0	<1.0
May	1st	72.9	32.4	7.68	11.5	<20	0.61	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
	2nd	80.4	35.6	8.1	13.5	<20	0.78	<0.1	13.2	<1.0	<0.1	<1.0	<1.0
	3rd	81.4	35.3	7.88	13.5	<20	0.74	<0.1	13.5	<1.0	<0.1	<1.0	<1.0
June	1st	72.2	32.8	7.25	10.6	<20	0.62	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	79.2	35.6	8.15	14.23	<20	0.71	<0.1	13.8	<1.0	<0.1	<1.0	<1.0
	3rd	79.2	35.6	8.15	14.23	<20	0.71	<0.1	13.8	<1.0	<0.1	<1.0	<1.0
July	1st	72.4	32.5	7.28	10.6	<20	0.58	<0.1	12.9	<1.0	<0.1	<1.0	<1.0
	2nd	80.4	34.6	8.18	14.35	<20	0.69	<0.1	13.74	<1.0	<0.1	<1.0	<1.0
	3rd	79.8	35.7	8.36	15.34	<20	0.78	<0.1	13.3	<1.0	<0.1	<1.0	<1.0
August	1st	72.1	32.8	7.15	10.6	<20	0.57	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
	2nd	80.2	33.5	8.2	14.14	<20	0.7	<0.1	13.65	<1.0	<0.1	<1.0	<1.0
	3rd	79.2	34.3	8.45	15.35	<20	0.74	<0.1	13.2	<1.0	<0.1	<1.0	<1.0
sep	1st	72.2	32.8	7.25	10.6	<20	0.62	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	76.5	34.2	8.2	14.54	<20	0.79	<0.1	13.7	<1.0	<0.1	<1.0	<1.0
	3rd	79.7	35.7	8.2	14.24	<20	0.78	<0.1	14.2	<1.0	<0.1	<1.0	<1.0
Maximum		81.4	36.9	8.45	15.35	<20	0.79	<0.1	14.2	<1.0	<0.1	<1.0	<1.0
Minimum		72.1	32.4	7.15	10.6	<20	0.57	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
SD		3.58	1.36	0.41	1.66	<20	0.07	<0.1	0.49	<1.0	<0.1	<1.0	<1.0
NAAQ Standard		80	80	100	60	1	6	400	180	1	20	5	4
<div>Checked By </div> <div></div>													

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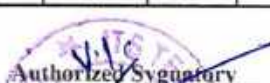
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TEST REPORT													
Ambient Air Quality Analysis										Report NO.- ITS/IREL-A/			
Issue To			M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam, Odisha										
Work Order			GEMC 51687709360706/07/SC-11684,Dated-19.11.2024										
Sampling Location			North mining Area SMP-3 A2										
Sampling Done By			Mr.Suresh Pradhan										
Instrument Used			Respirable Dust Sampler, Fine Dust sampler, CO meter, benzene sampler										
Sampling Period			April 2025-sep-2025										
Month	Week	PM10	PM2.5	S0x	N0x	NH3	CO	Pb	O3	C6H6	Benzo	Ni	As
April	1st	79.4	34.9	7.92	13.1	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	78.1	33.7	7.39	13.1	<20	0.6	<0.1	13	<1.0	<0.1	<1.0	<1.0
	3rd	79.4	32.8	7.1	12.8	<20	0.64	<0.1	13.7	<1.0	<0.1	<1.0	<1.0
May	1st	70.2	35.4	8.54	15.5	<20	0.56	<0.1	12.2	<1.0	<0.1	<1.0	<1.0
	2nd	78.8	33.9	7.45	12.6	<20	0.65	<0.1	13.2	<1.0	<0.1	<1.0	<1.0
	3rd	79.2	32.7	7.12	12.4	<20	0.61	<0.1	13.6	<1.0	<0.1	<1.0	<1.0
June	1st	70.4	36.6	8.55	15.1	<20	0.55	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	77.5	33.51	7.48	12.1	<20	0.57	<0.1	13.6	<1.0	<0.1	<1.0	<1.0
	3rd	77.5	33.51	7.48	12.1	<20	0.57	<0.1	13.6	<1.0	<0.1	<1.0	<1.0
July	1st	70.6	36.1	8.45	15.6	<20	0.61	<0.1	12.4	<1.0	<0.1	<1.0	<1.0
	2nd	76.2	32.4	7.52	12.2	<20	0.54	<0.1	13.3	<1.0	<0.1	<1.0	<1.0
	3rd	77.7	33.4	7.52	12.3	<20	0.62	<0.1	13.8	<1.0	<0.1	<1.0	<1.0
August	1st	70.2	36.5	8.4	15.4	<20	0.62	<0.1	12.6	<1.0	<0.1	<1.0	<1.0
	2nd	76.3	32.2	7.54	11.5	<20	0.52	<0.1	13.4	<1.0	<0.1	<1.0	<1.0
	3rd	77.1	33.48	7.56	12.7	<20	0.64	<0.1	13.6	<1.0	<0.1	<1.0	<1.0
sep	1st	70.4	36.6	8.55	15.1	<20	0.55	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	74.4	33.5	8.1	12.2	<20	0.59	<0.1	13.8	<1.0	<0.1	<1.0	<1.0
	3rd	77.3	33.25	7.51	12.8	<20	0.68	<0.1	13.4	<1.0	<0.1	<1.0	<1.0
Maximum		79.4	36.6	8.55	15.6	<20	0.74	<0.1	13.8	<1.0	<0.1	<1.0	<1.0
Minimum		70.2	32.2	7.1	11.5	<20	0.52	<0.1	12.2	<1.0	<0.1	<1.0	<1.0
Average		75.59	34.14	7.79	13.26	<20	0.60	<0.1	13.21	<1.0	<0.1	<1.0	<1.0
SD		3.55	1.49	0.51	1.39	<20	0.05	<0.1	0.49	<1.0	<0.1	<1.0	<1.0
NAAQ Standard		80	80	100	60	1	6	400	180	1	20	5	4
Checked By 													
Authorized Signatory 													

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Website: www.itslab.in, Email: itrlclab@gmail.com, info@itslab.in, contact@itslab.in
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TEST REPORT

Ambient Air Quality Analysis

Report NO.- ITS/IREL-AAQ-01

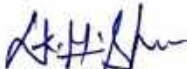

Issue To		M/S IREL (INDIA) LIMITED Matikhala, Chatrapur, Ganjam, Odisha											
Work Order		GEMC 51687709360706/07/SC-11684,Dated-19.11.2024											
Sampling Location		South mining Area SMP-2 A1											
Sampling Done By		Mr.Suresh Pradhan											
Instrument Used		Respirable Dust Sampler, Fine Dust sampler, CO meter, benzene sampler											
Sampling Period		April 2025-sep-2025											
Month	Week	PM10	PM2.5	SOx	NOx	NH3	CO	Pb	O3	C6H6	Benzo	Ni	As
April	1st	79.4	34.9	7.92	13.1	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	72.6	33.3	7.31	13.2	<20	0.61	<0.1	12.4	<1.0	<0.1	<1.0	<1.0
	3rd	73.2	32.3	7.45	13.8	<20	0.67	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
May	1st	78.2	36.5	7.88	13.4	<20	0.72	<0.1	12.8	<1.0	<0.1	<1.0	<1.0
	2nd	72.4	33	7.38	13.6	<20	0.65	<0.1	12.6	<1.0	<0.1	<1.0	<1.0
	3rd	73.8	31.6	7.52	13.9	<20	0.64	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
June	1st	79.3	34.9	7.2	12.6	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	72.8	33.6	7.35	12.4	<20	0.65	<0.1	12.3	<1.0	<0.1	<1.0	<1.0
	3rd	72.8	33.6	7.35	12.4	<20	0.65	<0.1	12.3	<1.0	<0.1	<1.0	<1.0
July	1st	78.6	35.7	7.25	12.9	<20	0.78	<0.1	13.2	<1.0	<0.1	<1.0	<1.0
	2nd	72.2	33.4	7.45	12.6	<20	0.65	<0.1	12.4	<1.0	<0.1	<1.0	<1.0
	3rd	72.5	33.1	7.25	12.8	<20	0.75	<0.1	12.6	<1.0	<0.1	<1.0	<1.0
August	1st	78.2	35.1	7.32	12.7	<20	0.75	<0.1	13.5	<1.0	<0.1	<1.0	<1.0
	2nd	72.5	33.4	7.46	12.1	<20	0.62	<0.1	12.3	<1.0	<0.1	<1.0	<1.0
	3rd	72.7	33.2	7.26	12.9	<20	0.74	<0.1	12.6	<1.0	<0.1	<1.0	<1.0
sep	1st	79.3	34.9	7.2	12.6	<20	0.74	<0.1	13	<1.0	<0.1	<1.0	<1.0
	2nd	73.4	32.6	7.32	12.4	<20	0.66	<0.1	12.5	<1.0	<0.1	<1.0	<1.0
	3rd	72.4	33.6	7.45	12.8	<20	0.66	<0.1	12.4	<1.0	<0.1	<1.0	<1.0
Maximum		79.4	36.5	7.92	13.9	<20	0.78	<0.1	13.5	<1.0	<0.1	<1.0	<1.0
Minimum		72.2	31.6	7.2	12.1	<20	0.61	<0.1	12.3	<1.0	<0.1	<1.0	<1.0
Average		74.7944	33.82	7.41	12.90	<20	0.69	<0.1	12.68	<1.0	<0.1	<1.0	<1.0
SD		2.98	1.26	0.20	0.51	<20	0.05	<0.1	0.35	<1.0	<0.1	<1.0	<1.0
NAAQ Standard		80	80	100	60	1	6	400	180	1	20	5	4

Checked By

Authorized Signatory

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Test Report						Report NO.- ITS/IREL-W-01						
Effluent Water Analysis												
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By		Mr. Suresh Pradhan										
Sample Description		Treated Effluent water(POND-1)										
Sample Quantity		2 Liter										
Sampling period		April 2025 to September 2025										
S.No	Parameter	Permissible norms by CPCB	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	5.5 to 9.0	7.69	7.72	7.58	7.64	7.72	7.65	7.72	7.58	7.67	0.05
2	Temperature,@ 25°C	-	25.6	25.9	25.6	25.5	25.9	25.9	25.9	25.5	25.73	0.19
3	Turbidity, NTU	-	10.6	10.8	10	10	10	15	15	10	11.07	1.96
4	Colour, Hazen	-	24	20	20	15	15	20	24	15	19.00	3.46
5	Alkalinity (as CaCO3), mg/l	-	182	188	185	180	190	190	190	180	185.83	4.22
6	Total Dissolved Solids,mg/l	-	752	765	760	740	745	770	770	740	755.33	11.69
7	Total Suspended Solids,mg/l	100	46	48	52	45	48	56	56	45	49.17	4.12
8	Oil & Grease,mg/l	20	<3.0	<3.0	<3.0	<3.0	<3.0	<3.0	0	0	<3.0	0.00
9	Biochemical Oxygen Demand,mg/l	100	5	5.4	5.2	5.4	5.8	5.6	5.8	5	5.40	0.28
10	Chemical Oxygen Demand,mg/l	250	46	45	48	50	52	50	52	45	48.50	2.66
11	Dissolved Oxygen,mg/l	-	6.4	6.2	6.2	6.4	6.6	6.8	6.8	6.2	6.43	0.23
12	Chloride as Cl, mg/l	-	71.9	71.8	84.6	84.7	88.2	87	88.2	71.8	81.37	7.50
13	Sulphate (as SO4),mg/l	-	32.8	32.6	34	38	42	38	42	32.6	36.23	3.73
14	Fluoride (as F),mg/l	15	0.39	0.36	0.35	0.33	0.34	0.36	0.39	0.33	0.36	0.02
15	Total Hardness (as CaCO3),mg/l	-	181	182	184	190	198	188	198	181	187.17	6.34
<div><div> CHECKED BY</div><div> AUTHORIZED SIGNATORY</div></div>												

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Report NO.- ITS/IREL-W-01,Page No 2 of 2												
16	Calcium (as Ca),mg/l	-	44.5	44.6	44.4	44.8	44.4	46	46	44.4	44.78	0.61
17	Magnesium (as Mg),mg/l	-	16.9	16.6	16.8	16.2	16.5	17.1	17.1	16.2	16.68	0.32
18	Sodium (as Na),mg/l	-	38.6	38.5	40.5	40.8	40.6	42	42	38.5	40.17	1.36
19	Potassium (as K),mg/l	-	2.5	2.6	3.2	3.1	3.2	3.3	3.3	2.5	2.98	0.34
20	Total Nitrogen,mg/l	-	9	9.2	8.6	8.5	8.6	8.8	9.2	8.5	8.78	0.27
21	Dissolved Phosphate (as P),mg/l	-	0.44	0.45	0.45	0.44	0.42	0.48	0.48	0.42	0.45	0.02
22	Iron (as Fe),mg/l	3	0.78	0.76	0.72	0.71	0.74	0.73	0.78	0.71	0.74	0.03
23	Copper (as Cu),mg/l	3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
24	Cadmium (as Cd),mg/l	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
25	Lead (as Pb),mg/l	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
26	Zinc (as Zn),mg/l	15	0.78	0.79	0.75	0.75	0.75	0.76	0.79	0.75	0.76	0.02
27	Total Chromium as Cr,mg/l	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
28	Hexavalent Chromium (as Cr+6),mg/l	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
29	Phenolic Compounds ,mg/l	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
30	Total Residual Chlorine,mg/l	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
31	Total Kjeldhal nitrogen,mg/l	100	4.5	4.52	4.62	4.45	4.52	4.72	4.72	4.45	4.56	0.10
32	Free Ammonia (as NH3),mg/l	5	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	0.00
33	Arsenic (as As),mg/l	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	0.00
35	Selenium (as Se),mg/l	<0.001	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
36	Nickel (as Ni),mg/l	<0.01	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
37	Cyanide (as CN),mg/l	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
38	Sulphides (as S),mg/l	5	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.01	0.00
39	Manganese (as Mn),mg/l	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
40	Vanadium (as V),mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
41	Nitrate Nitrogen as N,mg/l	20	2	2.2	1.8	1.9	1.8	1.9	2.2	1.8	1.93	0.15
42	Alpha Emitters,Bq/l	3.7	0.53	0.55	0.55	0.47	0.41	0.44	0.55	0.41	0.49	0.06
43	Beta emitters,Bq/l	37	0.86	0.89	0.89	0.9	0.98	1.05	0.98	0.86	0.93	0.07
44	Bio-assay Test#, %	90% survival of fish after 96 hrs in 100% effluent	100	100	100	100	100	100	100	100	100.00	0.00

BDL-Below detection limit, MPN-Most probable number

Alpha Emitter and Beta emitters Samples are tested by HPU,BARC,OSCOM

At. H. Sharma
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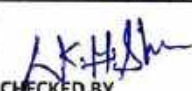



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Test Report		Report NO.- ITS/IREL-WW-01									
Treated Effluent water analysis											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Treated Effluent water analysis										
Sample Location	(ETP OUT LET)										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	July	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.4	6.48	6.42	6.44	6.52	6.48	6.52	6.4	6.46	0.04
2	Temperature, @ 25°C	25.7	25.8	25.5	25.4	25.8	25.7	25.8	25.4	25.65	0.16
3	Turbidity, NTU	19	16	20	15	15	20	20	15	17.50	2.43
4	Colour, Hazen	17	15	15	20	25	15	25	15	17.83	4.02
5	Alkalinity (as CaCO ₃), mg/l	198.2	202	205	210	225	212	225	198.2	208.70	9.46
6	Total Dissolved Solids, mg/l	695.8	708	710	718	722	718	722	695.8	711.97	9.53
7	Total Suspended Solids, mg/l	42.2	44	48	45	50	46	50	42.2	45.87	2.80
8	Oil & Grease, mg/l	2.8	2.9	2.8	2.5	2.6	2.9	2.9	2.5	<3.0	0.16
9	Biochemical Oxygen Demand, mg/l	4.7	5.1	4.4	4.5	4.6	4.8	5.1	4.4	4.68	0.25
10	Chemical Oxygen Demand, mg/l	33	35	38	35	40	40	40	33	36.83	2.93
11	Dissolved Oxygen, mg/l	5.8	5.6	5.6	5.4	5.6	5.8	5.8	5.4	5.63	0.15
12	Chloride as Cl, mg/l	87.7	88.2	88.2	82.3	82.4	88.4	88.4	82.3	86.20	2.99
13	Sulphate (as SO ₄), mg/l	72.6	74.2	72.6	70.8	70.6	72.6	74.2	70.6	72.23	1.34
14	Fluoride (as F), mg/l	0.55	0.56	0.54	0.52	0.51	0.55	0.56	0.51	0.54	0.02
15	Total Hardness (as CaCO ₃), mg/l	248	252	256	250	258	258	258	248	253.67	4.27
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Report NO.- ITS/IREL-WW-01, Page No. 2 of 2

16	Calcium (as Ca),mg/l	34	38	35	32	36	40	40	32	35.83	2.86
17	Magnesium (as Mg),mg/l	28.7	26.5	29.2	28.2	28.8	29.4	29.4	26.5	28.47	1.05
18	Sodium (as Na),mg/l	36	38	38	42	48	40	48	36	40.33	4.27
19	Potassium (as K),mg/l	11	12.4	10.8	10.6	11.2	10.4	12.4	10.4	11.07	0.71
20	Total Nitrogen,mg/l	17	17.2	16.5	16.2	16.5	16.4	17.2	16.2	16.63	0.38
21	Dissolved Phosphate (as P),mg/l	0.4	0.44	0.26	0.24	0.26	0.28	0.44	0.24	0.31	0.08
22	Iron (as Fe),mg/l	0.58	0.54	0.61	0.64	0.63	0.63	0.64	0.54	0.61	0.04
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.49	0.44	0.54	0.51	0.52	0.55	0.55	0.44	0.51	0.04
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	3.8	3.9	3.3	3.2	3.3	3.4	3.9	3.2	3.48	0.29
32	Free Ammonia (as NH ₃),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	1.6	1.8	1.7	1.7	1.8	1.8	1.8	1.6	1.73	0.08
42	Escherichia coli (MPN/100ml)	15	15	15	20	25	20	25	15	18.75	<2.0
43	Coliform Bacteria (MPN/100ml)	30	25	25	20	20	25	30	20	24.38	<2.0
44	Bio-assay Test#, %	100	100	100	100	90	100	100	90	98.33	4.08

MPN-Most probable number

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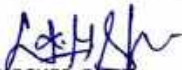

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Test Report				REPORT No.-ITS/IREL-SS-06			
Soil Analysis							
Issued To		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Location		Near pond pond (S-6)					
Sample Description		Soil Sample					
Sample Quantity		1 Kg					
Sample Analysis Duration		April 2025 to september 2025					
S.No	Parameters	Jun-25	Sep-25	Max	Min	Ave	SD
1	pH of 10% solution	8.21	8.35	8.35	8.21	8.28	0.10
2	Electrical conductivity of 10%	345	350	350	345	347.50	3.54
3	Sodium absorption ratio	8.7	8.5	8.7	8.5	8.60	0.14
4	Cation exchange capacity	22	20	22	20	21.00	1.41
5	Sulphates	1620	1630	1630	1620	1625.00	7.07
6	Nitrates	764	770	770	764	767.00	4.24
7	Nitrogen	1420	1440	1440	1420	1430.00	14.14
8	Total Phosphorus	145	150	150	145	147.50	3.54
9	Calcium	2056	2062	2062	2056	2059.00	4.24
10	Sodium	1444	1454	1454	1444	1449.00	7.07
11	Potassium	846	858	858	846	852.00	8.49
12	Iron	421	440	440	421	430.50	13.44
13	Organic Matter	0.6	0.7	0.7	0.6	0.65	0.07
CHECKED BY 							

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Test Report				REPORT No.-ITS/IREL-SS-05			
Soil Analysis							
Issued To		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Location		SodiumNitrate (S-5),					
Sample Description		Soil Sample					
Sample Quantity		1 Kg					
Sample Analysis Duration		April 2025 to september 2025					
S.No	Parameters	Jun-25	Sep-25	Max	Min	Ave	SD
1	pH of 10% solution	7.45	7.3	7.45	7.3	7.38	0.11
2	solution	246	234	246	234	240.00	8.49
3	Sodium absorption ratio	9.4	9.1	9.4	9.1	9.25	0.21
4	Cation exchange capacity	17	19	19	17	18.00	1.41
5	Sulphates	1350	1342	1350	1342	1346.00	5.66
6	Nitrates	665	650	665	650	657.50	10.61
7	Nitrogen	1244	1235	1244	1235	1239.50	6.36
8	Total Phosphorus	118	117	118	117	117.50	0.71
9	Calcium	2253	2242	2253	2242	2247.50	7.78
10	Sodium	130	120	130	120	125.00	7.07
11	Potassium	642	628	642	628	635.00	9.90
12	Iron	335	342	342	335	338.50	4.95
13	Organic Matter	0.65	0.64	0.65	0.64	0.65	0.01
CHECKED BY 		AUTHORIZED SIGNATORY 					

Terms & Conditions :

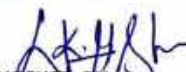

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Test Report				REPORT No.-ITS/IREL-SS-04			
Soil Analysis							
Issued To	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha						
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024						
Sampling Done By	Mr. Suresh Pradhan						
Sample Location	B.Arjyapalli (S-4),						
Sample Description	Soil Sample						
Sample Quantity	1 Kg						
Sample Analysis Duration	April 2025 to september 2025						
S.No	Parameters	Jun-25	Sep-25	Max	Min	Ave	SD
1	pH of 10% solution	7.75	7.74	7.75	7.74	7.75	0.01
2	Electrical conductivity of 10%	125.2	124.2	125.2	124.2	124.70	0.71
3	Sodium absorption ratio	9.4	9.8	9.8	9.4	9.60	0.28
4	Cation exchange capacity	22	24	24	22	23.00	1.41
5	Sulphates	970	970	970	970	970.00	0.00
6	Nitrates	562	568	568	562	565.00	4.24
7	Nitrogen	950	960	960	950	955.00	7.07
8	Total Phosphorus	140	150	150	140	145.00	7.07
9	Calcium	2320	2335	2335	2320	2327.50	10.61
10	Sodium	1250	1265	1265	1250	1257.50	10.61
11	Potassium	470	478	478	470	474.00	5.66
12	Iron	425	430	430	425	427.50	3.54
13	Organic Matter	0.54	0.58	0.58	0.54	0.56	0.03
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Test Report				REPORT No.-ITS/IREL-SS-03			
Soil Analysis							
Issued To		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Location		Matikhalo (S-3)					
Sample Description		Soil Sample					
Sample Quantity		1 Kg					
Sample Analysis Duration		April 2025 to september 2025					
S.No	Parameters	Jun-25	Sep-25	Max	Min	Ave	SD
1	pH of 10% solution	6.78	6.82	6.82	6.78	6.80	0.03
2	Electrical conductivity of 10%	72.4	72.5	72.5	72.4	72.45	0.07
3	Sodium absorption ratio	9.8	9.2	9.8	9.2	9.50	0.42
4	Cation exchange capacity	22	20	22	20	21.00	1.41
5	Sulphates	844	850	850	844	847.00	4.24
6	Nitrates	165	170	170	165	167.50	3.54
7	Nitrogen	740	748	748	740	744.00	5.66
8	Total Phosphorus	655	660	660	655	657.50	3.54
9	Calcium	2280	2262	2280	2262	2271.00	12.73
10	Sodium	340	344	344	340	342.00	2.83
11	Potassium	320	328	328	320	324.00	5.66
12	Iron	260	270	270	260	265.00	7.07
13	Organic Matter	0.61	0.66	0.66	0.61	0.64	0.04
<div><div> CHECKED BY</div><div> AUTHORIZED SIGNATORY</div></div>							

Terms & Conditions :


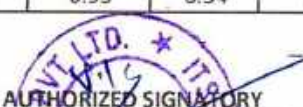
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Test Report				REPORT No.-ITS/IREL-SS-02			
Soil Analysis							
Issued To		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Location		Kanamana Village (S-2)					
Sample Description		Soil Sample					
Sample Quantity		1 Kg					
Sample Analysis Duration		April 2025-sep-2025					
S.No	Parameters	Jun-25	Sep-25	Max	Min	Ave	SD
1	pH of 10% solution	6.74	6.74	6.74	6.74	6.74	0.00
2	Electrical conductivity of 10%	28.8	28.3	28.8	28.3	28.55	0.35
3	Sodium absorption ratio	8.6	8.4	8.6	8.4	8.50	0.14
4	Cation exchange capacity	15	15	15	15	15.00	0.00
5	Sulphates	740	752	752	740	746.00	8.49
6	Nitrates	220	228	228	220	224.00	5.66
7	Nitrogen	830	833	833	830	831.50	2.12
8	Total Phosphorus	84	81	84	81	82.50	2.12
9	Calcium	2020	2032	2032	2020	2026.00	8.49
10	Sodium	240	248	248	240	244.00	5.66
11	Potassium	372	374	374	372	373.00	1.41
12	Iron	286	288	288	286	287.00	1.41
13	Organic Matter	0.55	0.53	0.55	0.53	0.54	0.01
CHECKED BY 		AUTHORIZED SIGNATORY 					

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Test Report				REPORT No.-ITS/IREL-SS-01			
Soil Analysis							
Issued To		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Location		Badaputi (S-1)					
Sample Description		Soil Sample					
Sample Quantity		1 Kg					
Sample Analysis Duration		April 2025 to september 2025					
S.No	Parameters	Jun-25	Sep-25	Max	Min	Ave	SD
1	pH of 10% solution	7.65	7.38	7.65	7.38	7.52	0.19
2	Electrical conductivity of 10%	60.4	60.25	60.4	60.25	60.33	0.11
3	Sodium absorption ratio	8.6	8.63	8.63	8.6	8.62	0.02
4	Cation exchange capacity	16	15	16	15	15.50	0.71
5	Sulphates(as SO4)(mg/kg)	660	680	680	660	670.00	14.14
6	Nitrates	158	157	158	157	157.50	0.71
7	Nitrogen	770	778	778	770	774.00	5.66
8	Total Phosphorus	74	72	74	72	73.00	1.41
9	Calcium	1960	1935	1960	1935	1947.50	17.68
10	Sodium	260	268	268	260	264.00	5.66
11	Potassium	380	384	384	380	382.00	2.83
12	Iron	260	266	266	260	263.00	4.24
13	Organic Matter	0.54	0.52	0.54	0.52	0.53	0.01
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Test Report											
Report NO.- ITS/IREL-WW-01											
Surface/Ground water											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface/ground water										
Sample Location	SOLID WASTE UP TRANCH-03										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	July	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.4	6.48	6.42	6.44	6.52	6.48	6.52	6.4	6.46	0.04
2	Temperature, @ 25°C	25.7	25.8	25.5	25.4	25.8	25.7	25.8	25.4	25.65	0.16
3	Turbidity, NTU	19	16	20	15	15	20	20	15	17.50	2.43
4	Colour, Hazen	17	15	15	20	25	15	25	15	17.83	4.02
5	Alkalinity (as CaCO ₃), mg/l	198.2	202	205	210	225	212	225	198.2	208.70	9.46
6	Total Dissolved Solids, mg/l	695.8	708	710	718	722	718	722	695.8	711.97	9.53
7	Total Suspended Solids, mg/l	42.2	44	48	45	50	46	50	42.2	45.87	2.80
8	Oil & Grease, mg/l	2.8	2.9	2.8	2.5	2.6	2.9	2.9	2.5	<3.0	0.16
9	Biochemical Oxygen Demand, mg/l	4.7	5.1	4.4	4.5	4.6	4.8	5.1	4.4	4.68	0.25
10	Chemical Oxygen Demand, mg/l	33	35	38	35	40	40	40	33	36.83	2.93
11	Dissolved Oxygen, mg/l	5.8	5.6	5.6	5.4	5.6	5.8	5.8	5.4	5.63	0.15
12	Chloride as Cl, mg/l	87.7	88.2	88.2	82.3	82.4	88.4	88.4	82.3	86.20	2.99
13	Sulphate (as SO ₄), mg/l	72.6	74.2	72.6	70.8	70.6	72.6	74.2	70.6	72.23	1.34
14	Fluoride (as F), mg/l	0.55	0.56	0.54	0.52	0.51	0.55	0.56	0.51	0.54	0.02
15	Total Hardness (as CaCO ₃), mg/l	248	252	256	250	258	258	258	248	253.67	4.27

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Report NO.- ITS/IREL-WW-01,

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16	Calcium (as Ca),mg/l	34	38	35	32	36	40	40	32	35.83	2.86
17	Magnesium (as Mg),mg/l	28.7	26.5	29.2	28.2	28.8	29.4	29.4	26.5	28.47	1.05
18	Sodium (as Na),mg/l	36	38	38	42	48	40	48	36	40.33	4.27
19	Potassium (as K),mg/l	11	12.4	10.8	10.6	11.2	10.4	12.4	10.4	11.07	0.71
20	Total Nitrogen,mg/l	17	17.2	16.5	16.2	16.5	16.4	17.2	16.2	16.63	0.38
21	Dissolved Phosphate (as P),mg/l	0.4	0.44	0.26	0.24	0.26	0.28	0.44	0.24	0.31	0.08
22	Iron (as Fe),mg/l	0.58	0.54	0.61	0.64	0.63	0.63	0.64	0.54	0.61	0.04
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.49	0.44	0.54	0.51	0.52	0.55	0.55	0.44	0.51	0.04
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	3.8	3.9	3.3	3.2	3.3	3.4	3.9	3.2	3.48	0.29
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	1.6	1.8	1.7	1.7	1.8	1.8	1.8	1.6	1.73	0.08
42	Escherichia coli (MPN/100ml)	15	15	15	20	25	20	25	15	18.75	<2.0
43	Coliform Bacteria (MPN/100ml)	30	25	25	20	20	25	30	20	24.38	<2.0
44	Bio-assay Test#, %	100	100	100	100	90	100	100	90	98.33	4.08

MPN-Most probable number

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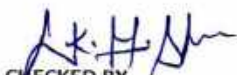

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Test Report						Report NO.- ITS/IREL-WW-02					
Surface /Ground water Analysis											
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha									
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024									
Sampling Done By		Mr. Suresh Pradhan									
Sample Description		Surface /Ground water Analysis									
Sample Location		SOLID WASTE-DOWN-4									
Sample Quantity		2 Liter									
Sampling period		April 2025 to September 2025									
S.No	Parameter	April	May	June	July	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.69	7.71	7.65	7.65	7.65	7.62	7.71	7.62	7.66	0.03
2	Temperature, @ 25°C	25.4	25.6	25.5	25.5	25.6	25.2	25.6	25.2	25.47	0.15
3	Turbidity, NTU	22	24	22	25	25	20	25	20	23.00	2.00
4	Colour, Hazen	21	22	20	20	20	20	22	20	20.50	0.84
5	Alkalinity (as CaCO3), mg/l	194.4	210	220	230	235	194	235	194	213.90	17.51
6	Total Dissolved Solids,mg/l	760.5	750	780	790	798	760	798	750	773.08	19.06
7	Total Suspended Solids,mg/l	43	48	50	52	52	42	52	42	47.83	4.40
8	Oil & Grease,mg/l	<1	<1	<1	<1	<1	<1	0	0	<3.0	0.00
9	Biochemical Oxygen Demand,mg/l	5.9	5.6	5.6	5.8	5.9	5.2	5.9	5.2	5.67	0.27
10	Chemical Oxygen Demand,mg/l	42	41	44	42	48	40	48	40	42.83	2.86
11	Dissolved Oxygen,mg/l	5.5	5.7	5.2	5.5	5.7	5	5.7	5	5.43	0.28
12	Chloride as Cl, mg/l	63	65.2	64.4	62.8	62.9	62.5	65.2	62.5	63.47	1.08
13	Sulphate (as SO4),mg/l	85.8	82.2	85.6	82.3	82.4	85.2	85.8	82.2	83.92	1.78
14	Fluoride (as F),mg/l	0.67	0.68	0.62	0.6	0.6	0.61	0.68	0.6	0.63	0.04
15	Total Hardness (as CaCO3),mg/l	242	248	236	230	238	238	248	230	238.67	6.02
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Report NO. - ITS/TREL-WW-02

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		46	48	48	44	45	44	48	44	45.83	1.83
16	Calcium (as Ca),mg/l										
17	Magnesium (as Mg),mg/l	30.6	32.2	30.4	28.5	28.6	30.2	32.2	28.5	30.08	1.38
18	Sodium (as Na),mg/l	59	60	60	54	55	58	60	54	57.67	2.58
19	Potassium (as K),mg/l	19	20	19.8	19.1	19.2	19.6	20	19	19.45	0.41
20	Total Nitrogen,mg/l	22.4	22.2	22.1	22.8	22.2	22.1	22.8	22.1	22.30	0.27
21	Dissolved Phosphate (as P),mg/l	0.23	0.24	0.3	0.32	0.33	0.19	0.33	0.19	0.27	0.06
22	Iron (as Fe),mg/l	0.62	0.65	0.72	0.74	0.78	0.68	0.78	0.62	0.70	0.06
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.72	0.7	0.75	0.78	0.76	0.72	0.78	0.7	0.74	0.03
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	4.9	4.8	4.6	4.4	4.3	4.5	4.9	4.3	4.58	0.23
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.01	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	2.3	2.32	2.25	2.25	2.1	2.3	2.32	2.1	2.25	0.08
42	Escherichia coli (MPN/100ml)	15	15	15	20	25	12	25	12	17.38	4.69
43	Coliform Bacteria (MPN/100ml)	30	25	20	20	20	15	30	15	21.88	5.16
44	Bio-assay Test#, %	95	95	95	100	100	90	100	90	95.83	3.76
MPN-Most probable number											

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Test Report Report NO.- ITS/IREL-WW-03											
Surface /Ground water Analysis											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface /Ground water Analysis										
Sample Location	COMPOSITE WATER MSP-5										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.84	6.92	6.85	6.95	6.91	6.82	6.95	6.82	6.88	0.05
2	Temperature,@ 25°C	25.8	25.9	25.6	25.6	25.8	25.8	25.9	25.6	25.75	0.12
3	Turbidity, NTU	8.1	8.4	5	5	5	5	8.4	5	6.08	1.68
4	Colour, Hazen	7	10	5	5	5	10	10	5	7.00	2.45
5	Alkalinity (as CaCO ₃), mg/l	164	184	155	162	160	158	184	155	163.83	10.36
6	Total Dissolved Solids,mg/l	828	820	730	740	745	720	828	720	763.83	47.46
7	Total Suspended Solids,mg/l	27	25	28	30	32	30	32	25	28.67	2.50
8	Oil & Grease,mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	0	<3.0	0.00
9	Biochemical Oxygen Demand,mg/l	3.6	3.5	3.6	3.2	3.1	3.5	3.6	3.1	3.42	0.21
10	Chemical Oxygen Demand,mg/l	24	25	24	22	21	22	25	21	23.00	1.55
11	Dissolved Oxygen,mg/l	5.8	5.7	5.5	5.6	5.8	5.6	5.8	5.5	5.67	0.12
12	Chloride as Cl, mg/l	80.5	82.5	78.6	80.2	80.4	80	82.5	78.6	80.37	1.25
13	Sulphate (as SO ₄),mg/l	36	36	32	34	38	34	38	32	35.00	2.10
14	Fluoride (as F),mg/l	0.38	0.34	0.32	0.34	0.33	0.35	0.38	0.32	0.34	0.02
15	Total Hardness (as CaCO ₃),mg/l	254	260	245	250	255	255	260	245	253.17	5.12
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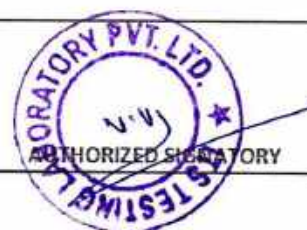


Report NO.- ITS/IREL-WW-03, Page No. 2 of 2

16	Calcium (as Ca),mg/l	56	58	50	55	56	55	58	50	55.00	2.68
17	Magnesium (as Mg),mg/l	22	24	22	21	22	24	24	21	22.50	1.22
18	Sodium (as Na),mg/l	64	65	62	60	65	66	66	60	63.67	2.25
19	Potassium (as K),mg/l	24.6	22.2	24.6	25	25.2	28	28	22.2	24.93	1.85
20	Total Nitrogen,mg/l	12	11.8	12.4	12.2	12.5	12.8	12.8	11.8	12.28	0.36
21	Dissolved Phosphate (as P),mg/l	0.59	0.55	0.55	0.58	0.56	0.56	0.59	0.55	0.57	0.02
22	Iron (as Fe),mg/l	0.68	0.66	0.66	0.62	0.64	0.62	0.68	0.62	0.65	0.02
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.71	0.72	0.72	0.75	0.76	0.75	0.76	0.71	0.74	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	7.2	7.6	7.2	7.5	7.6	7.3	7.6	7.2	7.40	0.19
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	2.9	2.9	2.9	2.4	2.4	3.2	3.2	2.4	2.78	0.32
42	Escherichia coli (MPN/100ml)	8	10	15	20	25	20	25	8	16.38	<2.0
43	Coliform Bacteria (MPN/100ml)	10	15	25	30	25	25	30	10	21.25	<2.0
44	Bio-assay Test#, %	90	95	100	100	90	100	100	90	95.83	4.92

MPN-Most probable number

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Page No.- 1 of 2											
Test Report						Report NO.- ITS/IREL-WW-04					
Surface /Ground water Analysis											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface /Ground water Analysis										
Sample Location	SOLAR EVAPORATION UP-06										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.79	7.81	7.43	7.43	7.48	7.55	7.81	7.43	7.58	0.17
2	Temperature,@ 25°C	25.7	25.9	25.8	25.8	25.9	26	26	25.7	25.85	0.10
3	Turbidity, NTU	17	18	10	10	10	10	18	10	12.50	3.89
4	Colour, Hazen	16	15	15	15	16	15	16	15	15.33	0.52
5	Alkalinity (as CaCO3), mg/l	184	175	190	194	188	180	194	175	185.17	6.94
6	Total Dissolved Solids,mg/l	737	730	840	860	890	820	890	730	812.83	65.70
7	Total Suspended Solids,mg/l	30.4	30.1	28	25	25	35	35	25	28.92	3.80
8	Oil & Grease,mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	0	<3.0	0.00
9	Biochemical Oxygen Demand,mg/l	5.8	5.4	5.7	5.6	5.4	6.2	6.2	5.4	5.68	0.30
10	Chemical Oxygen Demand,mg/l	38	36	38	40	45	40	45	36	39.50	3.08
11	Dissolved Oxygen,mg/l	5.9	5.8	5.4	5.8	5.9	5.8	5.9	5.4	5.77	0.19
12	Chloride as Cl, mg/l	81	82	84	90	98	90	98	81	87.50	6.44
13	Sulphate (as SO4),mg/l	54	52	55	60	65	60	65	52	57.67	4.84
14	Fluoride (as F),mg/l	0.41	0.41	0.44	0.41	0.42	0.43	0.44	0.41	0.42	0.01
15	Total Hardness (as CaCO3),mg/l	258	250	263	275	280	275	280	250	266.83	11.69
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Report NO.- ITS/IREL-WW-04, Page No.- 2 of 2

16	Calcium (as Ca),mg/l	78	76	79	82	86	80	86	76	80.17	3.49
17	Magnesium (as Mg),mg/l	19.8	19.2	19.2	22.4	22.4	19.5	22.4	19.2	20.42	1.55
18	Sodium (as Na),mg/l	78	75	74	76	78	72	78	72	75.50	2.35
19	Potassium (as K),mg/l	37.5	33.5	38.2	40	40	36.2	40	33.5	37.57	2.48
20	Total Nitrogen,mg/l	20.8	20.6	22.4	22.1	22.2	22.6	22.6	20.6	21.78	0.86
21	Dissolved Phosphate (as P),mg/l	0.46	0.45	0.45	0.43	0.44	0.5	0.5	0.43	0.46	0.02
22	Iron (as Fe),mg/l	0.67	0.62	0.75	0.77	0.79	0.8	0.8	0.62	0.73	0.07
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
26	Zinc (as Zn),mg/l	0.88	0.85	0.85	0.9	0.92	0.9	0.92	0.85	0.88	0.03
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
28	Cr+6,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
31	Total Kjeldhal nitrogen,mg/l	9.8	9.6	9.4	9.6	9.8	9.8	9.8	9.4	9.67	0.16
32	Free Ammonia (as NH ₃),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	0.00
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	0.00
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	0.00
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	0.00
41	Nitrate Nitrogen as N,mg/l	3	3.1	3.2	3.8	3.2	3.3	3.8	3	3.27	0.28
42	Escherichia coli (MPN/100ml)	8	10	15	20	25	20	25	8	16.38	6.53
43	Coliform Bacteria (MPN/100ml)	20	15	25	30	25	25	30	15	23.13	5.16
44	Bio-assay Test#, %	95	100	95	95	100	100	100	95	97.50	2.74

MPN-Most probable number

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Page No. 1 of 2

Test Report						Report NO.- ITS/IREL-WW-05					
Surface /Ground water Analysis											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface /Ground water Analysis										
Sample Location	SOLAR EVAPORATION DOWN-07										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.74	6.78	6.85	6.75	6.75	6.9	6.9	6.74	6.80	0.07
2	Temperature,@ 25°C	25.2	25.8	25.8	25.5	25.5	25.9	25.9	25.2	25.62	0.26
3	Turbidity, NTU	15	15	15	15	15	15	15	15	15.00	0.00
4	Colour, Hazen	5	5	5	10	10	10	10	5	7.50	2.74
5	Alkalinity (as CaCO3), mg/l	220	225	220	230	252	228	252	220	229.17	11.91
6	Total Dissolved Solids,mg/l	510	520	550	580	588	540	588	510	548.00	31.37
7	Total Suspended Solids,mg/l	30	28	30	35	45	42	45	28	35.00	7.04
8	Oil & Grease,mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0	0	<3.0	0.00
9	Biochemical Oxygen Demand,mg/l	4.5	4.4	4.9	5.1	5.4	4.8	5.4	4.4	4.85	0.37
10	Chemical Oxygen Demand,mg/l	35	34	32	35	42	38	42	32	36.00	3.52
11	Dissolved Oxygen,mg/l	5.7	5.6	5.7	5.8	5.7	5.8	5.8	5.6	5.72	0.08
12	Chloride as Cl, mg/l	58.3	56.4	62.6	62.7	62.6	64.6	64.6	56.4	61.20	3.14
13	Sulphate (as SO4),mg/l	45.4	45.2	48.6	48.4	48.7	49	49	45.2	47.55	1.75
14	Fluoride (as F),mg/l	0.4	0.42	0.4	0.42	0.43	0.42	0.43	0.4	0.42	0.01
15	Total Hardness (as CaCO3),mg/l	182	188	180	188	198	190	198	180	187.67	6.38
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16	Calcium (as Ca),mg/l	47.2	47.4	45.8	45.9	45.9	45.8	47.4	45.8	46.33	0.75
17	Magnesium (as Mg),mg/l	20.2	20.4	18.8	18.2	18.1	20.2	20.4	18.1	19.32	1.07
18	Sodium (as Na),mg/l	44.8	44.5	48.8	52	52	50	52	44.5	48.68	3.36
19	Potassium (as K),mg/l	16.2	16.4	15.6	16	16	15.2	16.4	15.2	15.90	0.43
20	Total Nitrogen,mg/l	15.2	15.4	14.8	15.1	15.2	15.2	15.4	14.8	15.15	0.20
21	Dissolved Phosphate (as P),mg/l	0.18	0.19	0.16	0.17	0.18	0.18	0.19	0.16	0.18	0.01
22	Iron (as Fe),mg/l	0.34	0.36	0.34	0.36	0.35	0.36	0.36	0.34	0.35	0.01
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.03	<0.03
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.82	0.88	0.89	0.85	0.86	0.91	0.91	0.82	0.87	0.03
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	6.6	6.8	6.3	6.6	6.7	6.5	6.8	6.3	6.58	0.17
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	3.5	3.2	3.4	3.5	3.8	3.8	3.8	3.2	3.53	0.23
42	Escherichia coli (MPN/100ml)	22	20	15	15	20	20	22	15	18.63	<2.0
43	Coliform Bacteria (MPN/100ml)	34	30	30	30	25	25	34	25	29.13	<2.0
44	Bio-assay Test#, %	90	95	100	100	100	90	100	90	95.83	4.92

MPN-Most probable number

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Test Report

Report NO.- ITS/IREL-WW-06

Surface /Ground water Analysis

Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024
Sampling Done By	Mr. Suresh Pradhan
Sample Description	Surface /Ground water Analysis
Sample Location	REEP UP-8
Sample Quantity	2 Liter
Sampling period	APRIL 2025 to SEPTEMBER 2025

S.No	Parameter	April	May	June	July	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.82	7.85	7.56	7.56	7.58	7.62	7.85	7.56	7.67	0.13
2	Temperature, @ 25°C	25.3	25.8	25.6	25.6	25.6	25.8	25.8	25.3	25.62	0.18
3	Turbidity, NTU	20	20	20	20	20	20	20	20	20.00	0.00
4	Colour, Hazen	12	10	20	20	20	22	22	10	17.33	5.01
5	Alkalinity (as CaCO ₃), mg/l	240	245	242	250	255	250	255	240	247.00	5.66
6	Total Dissolved Solids, mg/l	760	780	756	770	778	760	780	756	767.33	10.17
7	Total Suspended Solids, mg/l	35	40	36	38	38	40	40	35	37.83	2.04
8	Oil & Grease, mg/l	2.3	2.6	2.3	2.2	2.2	2.5	2.6	2.2	<3.0	0.16
9	Biochemical Oxygen Demand, mg/l	6.8	7.1	6.9	6.8	6.9	6.8	7.1	6.8	6.88	0.12
10	Chemical Oxygen Demand, mg/l	48	50	45	45	50	45	50	45	47.17	2.48
11	Dissolved Oxygen, mg/l	5.8	5.9	5.7	5.6	5.8	5.8	5.9	5.6	5.77	0.10
12	Chloride as Cl, mg/l	84.2	85.6	88.2	88.8	90.2	88.4	90.2	84.2	87.57	2.23
13	Sulphate (as SO ₄), mg/l	71	72	64	70	75	55	75	55	67.83	7.25
14	Fluoride (as F), mg/l	0.52	0.55	0.46	0.48	0.47	0.48	0.55	0.46	0.49	0.03
15	Total Hardness (as CaCO ₃), mg/l	280	292	290	305	310	298	310	280	295.83	10.85

MPN-Most probable number

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Report NO.- ITS/IREL-WW-06, Page No. 2 of 2

16	Calcium (as Ca),mg/l	80.5	81.4	78.4	78.6	78.8	78.7	81.4	78.4	79.40	1.24
17	Magnesium (as Mg),mg/l	19.6	20.2	20.2	20.5	20.6	20.5	20.6	19.6	20.27	0.37
18	Sodium (as Na),mg/l	70.8	71.4	65.6	65.8	65.9	65.8	71.4	65.6	67.55	2.76
19	Potassium (as K),mg/l	25.7	30.2	23.2	24.2	24.4	23.4	30.2	23.2	25.18	2.61
20	Total Nitrogen,mg/l	24.5	24.8	24.1	24.2	24.1	22.2	24.8	22.2	23.98	0.92
21	Dissolved Phosphate (as P),mg/l	0.29	0.3	0.26	0.28	0.29	0.25	0.3	0.25	0.28	0.02
22	Iron (as Fe),mg/l	0.54	0.52	0.61	0.64	0.6	0.62	0.64	0.52	0.59	0.05
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.98	0.95	0.96	0.91	0.95	0.94	0.98	0.91	0.95	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	13.2	13.8	11.4	11.8	11.6	11.8	13.8	11.4	12.27	0.99
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	7.2	7.6	6.5	6.8	6.4	6.6	7.6	6.4	6.85	0.46
42	Escherichia coli (MPN/100ml)	22	20	15	15	20	20	22	15	18.63	<2.0
43	Coliform Bacteria (MPN/100ml)	34	30	30	30	25	25	34	25	29.13	<2.0
44	Bio-assay Test#, %	95	90	95	95	100	100	100	90	95.83	3.76

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Test Report

Report NO.- ITS/IREL-WW-07

Surface /Ground water Analysis

Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024
Sampling Done By	Mr. Suresh Pradhan
Sample Description	Surface /Ground water Analysis
Sample Location	REEP DOWN-9
Sample Quantity	2 Liter
Sampling period	APRIL 2025 to SEPTEMBER 2025

S.No	Parameter	April	May	June	July	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.62	7.69	7.66	7.45	7.23	7.7	7.7	7.23	7.56	0.18
2	Temperature, @ 25°C	25.8	25.8	25.5	25.6	25.8	25.6	25.8	25.5	25.68	0.13
3	Turbidity, NTU	20	20	15	15	20	15	20	15	17.50	2.74
4	Colour, Hazen	20	20	25	25	25	20	25	20	22.50	2.74
5	Alkalinity (as CaCO ₃), mg/l	270	255	265	282	290	270	290	255	272.00	12.41
6	Total Dissolved Solids, mg/l	750	740	755	755	782	755	782	740	756.17	13.93
7	Total Suspended Solids, mg/l	30	28	36	40	45	40	45	28	36.50	6.50
8	Oil & Grease, mg/l	2.9	2.8	2.4	2.2	2.1	2.5	2.9	2.1	<3.0	0.32
9	Biochemical Oxygen Demand, mg/l	4.6	4.7	4.8	4.5	4.8	4.9	4.9	4.5	4.72	0.15
10	Chemical Oxygen Demand, mg/l	35	38	35	38	40	40	40	35	37.67	2.25
11	Dissolved Oxygen, mg/l	6.7	6.8	6.6	6.6	6.8	6.6	6.8	6.6	6.68	0.10
12	Chloride as Cl, mg/l	88.3	92.4	86.2	86.4	86.6	86.4	92.4	86.2	87.72	2.42
13	Sulphate (as SO ₄), mg/l	48	50	44	45	50	46	50	44	47.17	2.56
14	Fluoride (as F), mg/l	0.38	0.36	0.42	0.46	0.44	0.44	0.46	0.36	0.42	0.04
15	Total Hardness (as CaCO ₃), mg/l	278	260	265	270	280	270	280	260	270.50	7.58

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16	Calcium (as Ca),mg/l	85	78	75	80	90	75	90	75	80.50	5.96
17	Magnesium (as Mg),mg/l	28.6	25.3	25.2	26.2	26.8	25.2	28.6	25.2	26.22	1.34
18	Sodium (as Na),mg/l	82.5	81.2	80.2	80.5	80.6	80.2	82.5	80.2	80.87	0.88
19	Potassium (as K),mg/l	41.6	40.4	40.5	40.6	40.4	38.2	41.6	38.2	40.28	1.12
20	Total Nitrogen,mg/l	17.8	14.1	17.2	17.4	17.2	17.8	17.8	14.1	16.92	1.41
21	Dissolved Phosphate (as P),mg/l	0.22	0.24	0.28	0.29	0.26	0.26	0.29	0.22	0.26	0.03
22	Iron (as Fe),mg/l	0.54	0.56	0.46	0.47	0.42	0.48	0.56	0.42	0.49	0.05
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.81	0.78	0.81	0.85	0.82	0.82	0.85	0.78	0.82	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	7.6	7.5	7.1	7.5	7.6	7.4	7.6	7.1	7.45	0.19
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	5.8	5.5	5.5	5.2	5.4	5.8	5.8	5.2	5.53	0.23
42	Escherichia coli (MPN/100ml)	15	15	15	20	15	10	20	10	15.00	3.16
43	Coliform Bacteria (MPN/100ml)	20	25	25	15	15	20	25	15	20.00	4.47
44	Bio-assay Test#, %	90	100	100	100	100	100	100	90	98.33	4.08

MPN-Most probable number

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Page No.- 1 of 2

Test Report											
Report NO.- ITS/IREL-WW-08											
Surface /Ground water Analysis											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface /Ground water Analysis										
Sample Location	RAILWAY Platform -10										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	July	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.18	7.54	6.72	6.75	6.8	6.75	7.54	6.72	6.96	0.33
2	Temperature, @ 25°C	25.9	25.9	25.5	25.6	25.6	25.6	25.9	25.5	25.68	0.17
3	Turbidity, NTU	9.8	9.7	9.6	10	10	9.8	10	9.6	9.82	0.16
4	Colour, Hazen	16	10	20	20	20	25	25	10	18.50	5.05
5	Alkalinity (as CaCO ₃), mg/l	215	210	225	220	230	230	230	210	221.67	8.16
6	Total Dissolved Solids, mg/l	720	716	720	720	716	730	730	716	720.33	5.13
7	Total Suspended Solids, mg/l	26	24	28	32	3	30	32	3	23.83	10.59
8	Oil & Grease, mg/l	<1	<1	<1	<1	<1	<1	0	0	<3.0	0.00
9	Biochemical Oxygen Demand, mg/l	4.1	4.2	3.7	3.8	3.6	3.8	4.2	3.6	3.87	0.23
10	Chemical Oxygen Demand, mg/l	26	25	25	26	25	30	30	25	26.17	1.94
11	Dissolved Oxygen, mg/l	6.8	6.6	6.4	6.5	6.6	6.5	6.8	6.4	6.57	0.14
12	Chloride as Cl, mg/l	84	84	78	80	85	80	85	78	81.83	2.86
13	Sulphate (as SO ₄), mg/l	58	60	56	52	54	60	60	52	56.67	3.27
14	Fluoride (as F), mg/l	0.35	0.34	0.34	0.36	0.35	0.35	0.36	0.34	0.35	0.01
15	Total Hardness (as CaCO ₃), mg/l	242	252	235	240	250	240	252	235	243.17	6.52
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Report NO.- ITS/IREL-WW-08, Page No.- 2 of 2

16	Calcium (as Ca),mg/l	65	68	62	65	62	66	68	62	64.67	2.34
17	Magnesium (as Mg),mg/l	22.4	21.2	21.6	21.8	21.7	21.8	22.4	21.2	21.75	0.39
18	Sodium (as Na),mg/l	72	70	72	72	72.2	72.2	72.2	70	71.73	0.85
19	Potassium (as K),mg/l	32	30.2	34	34	40	35.6	40	30.2	34.30	3.36
20	Total Nitrogen,mg/l	13.9	13.2	13.8	13.2	13.4	13.6	13.9	13.2	13.52	0.30
21	Dissolved Phosphate (as P),mg/l	0.6	0.65	0.62	0.6	0.65	0.64	0.65	0.6	0.63	0.02
22	Iron (as Fe),mg/l	0.68	0.62	0.46	0.52	0.54	0.48	0.68	0.46	0.55	0.08
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.65	0.6	0.62	0.66	0.63	0.66	0.66	0.6	0.64	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	7.4	7.2	7.5	7.8	7.2	7.8	7.8	7.2	7.48	0.27
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	5.6	5.4	5.7	5.2	5.1	5.8	5.8	5.1	5.47	0.28
42	Escherichia coli (MPN/100ml)	15	10	15	20	15	10	20	10	14.38	3.76
43	Coliform Bacteria (MPN/100ml)	20	20	25	15	15	20	25	15	19.38	3.76
44	Bio-assay Test#, %	100	100	95	95	90	95	100	90	95.83	3.76

MPN-Most probable number

H. H. Sharma
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page No. 1 of 2											
Test Report						Report NO.- ITS/IREL-WW-09					
Surface /Ground water Analysis											
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface /Ground water Analysis										
Sample Location	PHED WATER-11										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.22	7.26	7.32	7.36	7.45	7.42	7.45	7.22	7.34	0.09
2	Temperature,@ 25°C	25.8	25.9	25.8	25.5	25.5	25.9	25.9	25.5	25.73	0.19
3	Turbidity, NTU	5	5	5	5	5	5	5	5	5.00	0.00
4	Colour, Hazen	<5	<5	<5	<5	<5	<5	0	0	<5	0.00
5	Alkalinity (as CaCO3), mg/l	178	176	180	190	180	185	190	176	181.50	5.13
6	Total Dissolved Solids,mg/l	455	440	470	480	475	475	480	440	465.83	15.30
7	Total Suspended Solids,mg/l	22	20	24	30	35	26	35	20	26.17	5.53
8	Oil & Grease,mg/l	<1	<1	<1	<1	<1	<1	0	0	<3.0	0.00
9	Biochemical Oxygen Demand,mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	0	0	<2.0	0.00
10	Chemical Oxygen Demand,mg/l	20	20	24	30	32	25	32	20	25.17	5.00
11	Dissolved Oxygen,mg/l	6.5	6.4	6.6	6.8	6.6	6.8	6.8	6.4	6.62	0.16
12	Chloride as Cl, mg/l	34	32	36	38	42	40	42	32	37.00	3.74
13	Sulphate (as SO4),mg/l	20	18	22	24	25	24	25	18	22.17	2.71
14	Fluoride (as F),mg/l	0.12	0.11	0.14	0.14	0.15	0.15	0.15	0.11	0.14	0.02
15	Total Hardness (as CaCO3),mg/l	140	145	150	155	162	160	162	140	152.00	8.60


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16	Calcium (as Ca),mg/l	36	32	40	45	50	45	50	32	41.33	6.62
17	Magnesium (as Mg),mg/l	21.2	18.2	22.2	22.8	22.9	22.8	22.9	18.2	21.68	1.82
18	Sodium (as Na),mg/l	18.2	20.2	17.6	17.8	17.2	17.7	20.2	17.2	18.12	1.07
19	Potassium (as K),mg/l	12.8	11.6	14.2	14.6	14.7	14.4	14.7	11.6	13.72	1.25
20	Total Nitrogen,mg/l	68.2	65.6	67.6	62.3	62.6	67.8	68.2	62.3	65.68	2.66
21	Dissolved Phosphate (as P),mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0	0	<0.03	0.00
22	Iron (as Fe),mg/l	0.29	0.3	0.24	0.25	0.25	0.26	0.3	0.24	0.27	0.02
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.75	0.76	0.75	0.71	0.72	0.79	0.79	0.71	0.75	0.03
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	2.7	2.8	2.4	2.2	2.1	2.5	2.8	2.1	2.45	0.27
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	2.1	2.2	1.9	1.4	1.2	1.8	2.2	1.2	1.77	0.39
42	Escherichia coli (MPN/100ml)	10	10	15	15	20	20	20	10	15.00	4.47
43	Coliform Bacteria (MPN/100ml)	25	20	20	20	15	20	25	15	20.00	3.16
44	Bio-assay Test#, %	100	95	100	100	100	100	100	95	99.17	2.04

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Test Report

Report NO.- ITS/IREL-WW-10

Surface /Ground water Analysis

Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha										
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024										
Sampling Done By	Mr. Suresh Pradhan										
Sample Description	Surface /Ground water Analysis										
Sample Location	MATIKHALO BOREWELL WATER-12										
Sample Quantity	2 Liter										
Sampling period	APRIL 2025 to SEPTEMBER 2025										
S.No	Parameter	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.9	6.85	6.76	6.75	6.74	6.8	6.9	6.74	6.80	0.06
2	Temperature, @ 25°C	31.1	25.9	25.7	25.6	25.6	25.8	31.1	25.6	26.62	2.20
3	Turbidity, NTU	3.4	15	15	15	15	10	15	3.4	12.23	4.77
4	Colour, Hazen	<5	10	10	10	10	10	10	10	10.00	4.08
5	Alkalinity (as CaCO ₃), mg/l	134	218	215	220	230	220	230	134	206.17	35.71
6	Total Dissolved Solids, mg/l	434	780	760	790	798	780	798	434	723.67	142.48
7	Total Suspended Solids, mg/l	<5	30	32	35	35	35	35	30	33.40	13.79
8	Oil & Grease, mg/l	<1	<1	<1	<1	<1	<1	0	0	<3.0	0.00
9	Biochemical Oxygen Demand, mg/l	<2	2.8	2.9	2.2	2.4	2.8	2.9	2.2	2.62	1.10
10	Chemical Oxygen Demand, mg/l	<5	18	20	22	25	20	25	18	21.00	8.89
11	Dissolved Oxygen, mg/l	5	6.5	6.6	6.8	6.4	6.8	6.8	5	6.35	0.68
12	Chloride as Cl, mg/l	39.9	78	75	80	88	70	88	39.9	71.82	16.73
13	Sulphate (as SO ₄), mg/l	20.2	35	32	37	36	34	37	20.2	32.37	6.20
14	Fluoride (as F), mg/l	0.26	0.31	0.33	0.34	0.32	0.35	0.35	0.26	0.32	0.03
15	Total Hardness (as CaCO ₃), mg/l	190	172	176	185	180	180	190	172	180.50	6.38

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16	Calcium (as Ca),mg/l	44	44	45	50	55	50	55	44	48.00	4.43
17	Magnesium (as Mg),mg/l	20.2	20.2	20.5	22.5	22.9	20.8	22.9	20.2	21.18	1.20
18	Sodium (as Na),mg/l	48.2	48.2	48.6	48.2	49.5	48.8	49.5	48.2	48.58	0.52
19	Potassium (as K),mg/l	14.6	14.6	14.5	14.4	18.2	14.8	18.2	14.4	15.18	1.48
20	Total Nitrogen,mg/l	5.5	5.6	5.6	5.8	5.2	5.5	5.8	5.2	5.53	0.20
21	Dissolved Phosphate (as P),mg/l	0.4	0.42	0.42	0.42	0.41	0.46	0.46	0.4	0.42	0.02
22	Iron (as Fe),mg/l	0.28	0.32	0.24	0.22	0.26	0.24	0.32	0.22	0.26	0.04
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.61	0.62	0.63	0.68	0.61	0.64	0.68	0.61	0.63	0.03
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	2.5	2.6	2.8	2.2	2.14	2.6	2.8	2.14	2.47	0.26
32	Free Ammonia (as NH ₃),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	1.9	1.8	1.8	1.6	1.8	1.6	1.9	1.6	1.75	0.12
42	Escherichia coli (MPN/100ml)	10	10	15	15	90	20	90	10	32.50	31.25
43	Coliform Bacteria (MPN/100ml)	25	20	20	20	20	20	25	20	21.25	2.04
44	Bio-assay Test#, %	90	90	95	95	15	95	95	15	80.00	31.94

MPN-Most probable number

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Page No. 1 of 2

Test Report						Report NO.- ITS/IREL-WW-11					
Surface /Ground water Analysis											
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha									
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024									
Sampling Done By		Mr. Suresh Pradhan									
Sample Description		Surface /Ground water Analysis									
Sample Location		LILI POND									
Sample Quantity		2 Liter									
Sampling period		APRIL 2025 to SEPTEMBER 2025									
S.No	Parameter	April	May	June	july	August	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.88	7.9	7.86	7.9	7.58	7.9	7.9	7.58	7.84	0.13
2	Temperature,@ 25°C	25.9	25.9	25.8	25.7	25.8	25.6	25.9	25.6	25.78	0.12
3	Turbidity, NTU	5	5	5	5	5	5	5	5	5.00	0.00
4	Colour, Hazen	15	10	20	20	20	20	20	10	17.50	4.18
5	Alkalinity (as CaCO3), mg/l	245	260	230	240	245	244	260	230	244.00	9.70
6	Total Dissolved Solids,mg/l	480	490	480	490	480	498	498	480	486.33	7.53
7	Total Suspended Solids,mg/l	26	28	25	28	28	28	28	25	27.17	1.33
8	Oil & Grease,mg/l	2.5	2.4	2.6	2.4	2.2	2.7	2.7	2.2	<3.0	0.18
9	Biochemical Oxygen Demand,mg/l	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	0	0	<2.0	<2.0
10	Chemical Oxygen Demand,mg/l	8	8	7.6	7.8	7.4	7.8	8	7.4	7.77	0.23
11	Dissolved Oxygen,mg/l	6.6	6.5	6.4	6.8	6.8	6.8	6.8	6.4	6.65	0.18
12	Chloride as Cl, mg/l	35.6	35.5	32.2	32.4	32.9	32.4	35.6	32.2	33.50	1.60
13	Sulphate (as SO4),mg/l	22.8	20.2	22.8	25.6	25.8	22.8	25.8	20.2	23.33	2.09
14	Fluoride (as F),mg/l	0.22	0.21	0.22	0.24	0.26	0.24	0.26	0.21	0.23	0.02
15	Total Hardness (as CaCO3),mg/l	180	185	165	180	190	170	190	165	178.33	9.31


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16	Calcium (as Ca),mg/l	44	42	42	45	50	44	50	42	44.50	2.95
17	Magnesium (as Mg),mg/l	20.8	20.4	20.1	20.2	20.12	20.2	20.8	20.1	20.30	0.27
18	Sodium (as Na),mg/l	25.2	22.4	24.4	24.6	30	24.6	30	22.4	25.20	2.54
19	Potassium (as K),mg/l	5.6	5.7	5.5	5.8	8.5	5.4	8.5	5.4	6.08	1.19
20	Total Nitrogen,mg/l	6.9	6.8	6.6	6.8	6.7	6.8	6.9	6.6	6.77	0.10
21	Dissolved Phosphate (as P),mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0	0	<0.03	<0.03
22	Iron (as Fe),mg/l	0.18	0.16	0.14	0.16	0.18	0.15	0.18	0.14	0.16	0.02
23	Copper (as Cu),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.77	0.76	0.73	0.74	0.73	0.74	0.77	0.73	0.75	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
31	Total Kjeldhal nitrogen,mg/l	3.5	3.4	3.1	3.6	3.4	3.2	3.6	3.1	3.37	0.19
32	Free Ammonia (as NH3),mg/l	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0	0	<0.50	<0.50
33	Arsenic (as As),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
34	Mercury (as Hg),mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0	0	<0.001	<0.001
35	Selenium (as Se),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
36	Nickel (as Ni),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
37	Cyanide (as CN),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
38	Sulphides (as S),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
39	Manganese (as Mn),mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0	0	<0.1	<0.1
40	Vanadium (as V),mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0	0	<0.01	<0.01
41	Nitrate Nitrogen as N,mg/l	2.8	2.7	2.2	2.4	2.2	2.4	2.8	2.2	2.45	0.25
42	Escherichia coli (MPN/100ml)	20	15	10	15	20	10	20	10	15.00	4.47
43	Coliform Bacteria (MPN/100ml)	30	25	20	25	20	20	30	20	23.75	4.08
44	Bio-assay Test#, %	90	95	95	100	95	95	100	90	95.00	3.16

MPN-Most probable number

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Test Report				Report NO.- ITS/IREL-WW-12			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		HARIPUR VILLAGE-W1					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.65	6.8	6.8	6.65	6.73	0.11
2	Temperature, @ 25°C	25.4	25.6	25.6	25.4	25.50	0.14
3	Turbidity, NTU	7	7	7	7	7.00	0.00
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	242	240	242	240	241.00	1.41
6	Total Dissolved Solids,mg/l	810	820	820	810	815.00	7.07
7	Total Suspended Solids,mg/l	24	22	24	22	23.00	1.41
8	Oil & Grease,mg/l	<1	<1	0	0	<1.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.8	2.6	2.8	2.6	2.70	0.14
10	Chemical Oxygen Demand,mg/l	22	20	22	20	21.00	1.41
11	Dissolved Oxygen,mg/l	5.4	5.8	5.8	5.4	5.60	0.28
12	Chloride as Cl, mg/l	65.4	65.6	65.6	65.4	65.50	0.14
13	Sulphate (as SO4),mg/l	35.1	35.8	35.8	35.1	35.45	0.49
14	Fluoride (as F),mg/l	0.26	0.25	0.26	0.25	0.26	0.01
15	Total Hardness (as CaCO3),mg/l	204	208	208	204	206.00	2.83
16	Calcium (as Ca),mg/l	56.3	56.6	56.6	56.3	56.45	0.21
17	Magnesium (as Mg),mg/l	15.7	15.2	15.7	15.2	15.45	0.35
18	Sodium (as Na),mg/l	49.6	49.3	49.6	49.3	49.45	0.21
19	Potassium (as K),mg/l	14.4	14.8	14.8	14.4	14.60	0.28
20	Total Nitrogen,mg/l	5.5	5.8	5.8	5.5	5.65	0.21
21	Dissolved Phosphate (as P),mg/l	0.23	0.24	0.24	0.23	0.24	0.01
22	Iron (as Fe),mg/l	5.7	5.8	5.8	5.7	5.75	0.07
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.85	0.88	0.88	0.85	0.87	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	0.00
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
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Test Report				Report NO.- ITS/IREL-WW-13			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		UPALPATTI-2					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.82	6.84	6.84	6.82	6.83	0.01
2	Temperature, @ 25°C	25.2	25.6	25.6	25.2	25.40	0.28
3	Turbidity, NTU	7	7.2	7.2	7	7.10	0.14
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	215	220	220	215	217.50	3.54
6	Total Dissolved Solids,mg/l	835	840	840	835	837.50	3.54
7	Total Suspended Solids,mg/l	21.9	21.7	21.9	21.7	21.80	0.14
8	Oil & Grease,mg/l	<1	<1	0	0	<1	<1
9	Biochemical Oxygen Demand,mg/l	2.6	2.6	2.6	2.6	2.60	0.00
10	Chemical Oxygen Demand,mg/l	24	28	28	24	26.00	2.83
11	Dissolved Oxygen,mg/l	5.7	5.8	5.8	5.7	5.75	0.07
12	Chloride as Cl, mg/l	66.4	67.2	67.2	66.4	66.80	0.57
13	Sulphate (as SO4),mg/l	37.3	37.4	37.4	37.3	37.35	0.07
14	Fluoride (as F),mg/l	0.21	0.28	0.28	0.21	0.25	0.05
15	Total Hardness (as CaCO3),mg/l	215	220	220	215	217.50	3.54
16	Calcium (as Ca),mg/l	58.7	58.8	58.8	58.7	58.75	0.07
17	Magnesium (as Mg),mg/l	18.4	18.2	18.4	18.2	18.30	0.14
18	Sodium (as Na),mg/l	49.8	49.6	49.8	49.6	49.70	0.14
19	Potassium (as K),mg/l	15.2	15.4	15.4	15.2	15.30	0.14
20	Total Nitrogen,mg/l	5.2	5.4	5.4	5.2	5.30	0.14
21	Dissolved Phosphate (as P),mg/l	0.3	0.32	0.32	0.3	0.31	0.01
22	Iron (as Fe),mg/l	6.8	6.9	6.9	6.8	6.85	0.07
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.9	0.95	0.95	0.9	0.93	0.04
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
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Test Report				Report NO.- ITS/IREL-WW-14			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		KALIPILI-3					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.3	7.35	7.35	7.3	7.33	0.04
2	Temperature, @ 25°C	26	26.2	26.2	26	26.10	0.14
3	Turbidity, NTU	6.8	6.9	6.9	6.8	6.85	0.07
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	200	210	210	200	205.00	7.07
6	Total Dissolved Solids,mg/l	785	790	790	785	787.50	3.54
7	Total Suspended Solids,mg/l	22.2	22.4	22.4	22.2	22.30	0.14
8	Oil & Grease,mg/l	<1	<1	0	0	<1.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.2	2.4	2.4	2.2	2.30	0.14
10	Chemical Oxygen Demand,mg/l	20	22	22	20	21.00	1.41
11	Dissolved Oxygen,mg/l	5.6	5.8	5.8	5.6	5.70	0.14
12	Chloride as Cl, mg/l	65.1	65.5	65.5	65.1	65.30	0.28
13	Sulphate (as SO4),mg/l	35.2	35.4	35.4	35.2	35.30	0.14
14	Fluoride (as F),mg/l	0.21	0.22	0.22	0.21	0.22	0.01
15	Total Hardness (as CaCO3),mg/l	194	195	195	194	194.50	0.71
16	Calcium (as Ca),mg/l	55.4	55.6	55.6	55.4	55.50	0.14
17	Magnesium (as Mg),mg/l	12.5	12.4	12.5	12.4	12.45	0.07
18	Sodium (as Na),mg/l	45.2	45.4	45.4	45.2	45.30	0.14
19	Potassium (as K),mg/l	14	14.2	14.2	14	14.10	0.14
20	Total Nitrogen,mg/l	7.3	4.3	7.3	4.3	5.80	2.12
21	Dissolved Phosphate (as P),mg/l	4.2	0.24	4.2	0.24	2.22	2.80
22	Iron (as Fe),mg/l	0.23	4.52	4.52	0.23	2.38	3.03
23	Copper (as Cu),mg/l	4.44	<0.01	4.44	4.44	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	<0.01	0.82	0.82	0.82	0.82	0.58
27	Total Chromium as Cr,mg/l	0.85	<0.01	0.85	0.85	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.01	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.1	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<0.01	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0


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Laboratory: A-114, Sector-80, Phase-II Noida, Gautam Budh Nagar - 201305, (U.P.)

(An ISO 9001: 2015, ISO 14001:2015 & ISO 45001:2018 Certified Laboratory)

Website: www.itslab.in, Email: itrlclab@gmail.com, info@itslab.in, contact@itslab.in

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Test Report				Report NO.- ITS/IREL-WW-15			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		BASANAPUTTI-4					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.9	6.5	6.9	6.5	6.70	0.28
2	Temperature,@ 25°C	25.9	25.8	25.9	25.8	25.85	0.07
3	Turbidity, NTU	6.5	6.6	6.6	6.5	6.55	0.07
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	210	218	218	210	214.00	5.66
6	Total Dissolved Solids,mg/l	825	820	825	820	822.50	3.54
7	Total Suspended Solids,mg/l	24.2	24.1	24.2	24.1	24.15	0.07
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.7	2.6	2.7	2.6	2.65	0.07
10	Chemical Oxygen Demand,mg/l	24	25	25	24	24.50	0.71
11	Dissolved Oxygen,mg/l	5.6	5.7	5.7	5.6	5.65	0.07
12	Chloride as Cl, mg/l	66.2	66.4	66.4	66.2	66.30	0.14
13	Sulphate (as SO4),mg/l	36.2	36.1	36.2	36.1	36.15	0.07
14	Fluoride (as F),mg/l	0.26	0.28	0.28	0.26	0.27	0.01
15	Total Hardness (as CaCO3),mg/l	220	228	228	220	224.00	5.66
16	Calcium (as Ca),mg/l	54.2	54.1	54.2	54.1	54.15	0.07
17	Magnesium (as Mg),mg/l	13.6	13.3	13.6	13.3	13.45	0.21
18	Sodium (as Na),mg/l	52.8	52.7	52.8	52.7	52.75	0.07
19	Potassium (as K),mg/l	14.2	14.1	14.2	14.1	14.15	0.07
20	Total Nitrogen,mg/l	5.3	5.4	5.4	5.3	5.35	0.07
21	Dissolved Phosphate (as P),mg/l	0.24	0.26	0.26	0.24	0.25	0.01
22	Iron (as Fe),mg/l	0.71	0.71	0.71	0.71	0.71	0.00
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.65	0.63	0.65	0.63	0.64	0.01
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY		AUTHORIZED SIGNATORY					

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Test Report				Report NO.- ITS/IREL-WW-16			
Surface/Ground water							
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha						
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024						
Sampling Done By	Mr. Suresh Pradhan						
Sample Description	Surface/ground water						
Sample Location	BADAPUTTI-5						
Sample Quantity	2 Liter						
Sampling period	APRIL 2025 to SEPTEMBER 2025						
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.7	6.5	6.7	6.5	6.60	0.14
2	Temperature, @ 25°C	26.1	26.2	26.2	26.1	26.15	0.07
3	Turbidity, NTU	7.6	7.6	7.6	7.6	7.60	0.00
4	Colour, Hazen	10	10	10	10	10.00	0.00
5	Alkalinity (as CaCO3), mg/l	220	224	224	220	222.00	2.83
6	Total Dissolved Solids,mg/l	830	833	833	830	831.50	2.12
7	Total Suspended Solids,mg/l	22.4	22.4	22.4	22.4	22.40	0.00
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.4	2.2	2.4	2.2	2.30	0.14
10	Chemical Oxygen Demand,mg/l	24	26	26	24	25.00	1.41
11	Dissolved Oxygen,mg/l	5.8	5.4	5.8	5.4	5.60	0.28
12	Chloride as Cl, mg/l	63.6	63.6	63.6	63.6	63.60	0.00
13	Sulphate (as SO4),mg/l	39.1	39.1	39.1	39.1	39.10	0.00
14	Fluoride (as F),mg/l	0.22	0.23	0.23	0.22	0.23	0.01
15	Total Hardness (as CaCO3),mg/l	224	228	228	224	226.00	2.83
16	Calcium (as Ca),mg/l	53.1	53.1	53.1	53.1	53.10	0.00
17	Magnesium (as Mg),mg/l	18.8	18.4	18.8	18.4	18.60	0.28
18	Sodium (as Na),mg/l	46.4	46.5	46.5	46.4	46.45	0.07
19	Potassium (as K),mg/l	15.6	15.3	15.6	15.3	15.45	0.21
20	Total Nitrogen,mg/l	6.4	6.6	6.6	6.4	6.50	0.14
21	Dissolved Phosphate (as P),mg/l	0.23	0.24	0.24	0.23	0.24	0.01
22	Iron (as Fe),mg/l	0.72	0.71	0.72	0.71	0.72	0.01
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.84	0.81	0.84	0.81	0.83	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY		AUTHORIZED SIGNATORY					

[Signature]
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[Signature]
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Test Report				Report NO.- ITS/IREL-WW-17			
Surface/Ground water							
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha						
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024						
Sampling Done By	Mr. Suresh Pradhan						
Sample Description	Surface/ground water						
Sample Location	KANAMANA VILLAGE-6						
Sample Quantity	2 Liter						
Sampling period	APRIL 2025 to SEPTEMBER 2025						
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.2	6.4	6.4	6.2	6.30	0.14
2	Temperature, @ 25°C	26.1	26.1	26.1	26.1	26.10	0.00
3	Turbidity, NTU	6.8	6.3	6.8	6.3	6.55	0.35
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	200	210	210	200	205.00	7.07
6	Total Dissolved Solids,mg/l	735	730	735	730	732.50	3.54
7	Total Suspended Solids,mg/l	21.2	21.2	21.2	21.2	21.20	0.00
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.6	2.3	2.6	2.3	2.45	0.21
10	Chemical Oxygen Demand,mg/l	20	20	20	20	20.00	0.00
11	Dissolved Oxygen,mg/l	4.8	4.8	4.8	4.8	4.80	0.00
12	Chloride as Cl, mg/l	65.2	65.1	65.2	65.1	65.15	0.07
13	Sulphate (as SO4),mg/l	34.2	34.4	34.4	34.2	34.30	0.14
14	Fluoride (as F),mg/l	0.27	0.26	0.27	0.26	0.27	0.01
15	Total Hardness (as CaCO3),mg/l	228	225	228	225	226.50	2.12
16	Calcium (as Ca),mg/l	53.4	53.3	53.4	53.3	53.35	0.07
17	Magnesium (as Mg),mg/l	13.8	13.6	13.8	13.6	13.70	0.14
18	Sodium (as Na),mg/l	44.4	44.2	44.4	44.2	44.30	0.14
19	Potassium (as K),mg/l	13.6	13.5	13.6	13.5	13.55	0.07
20	Total Nitrogen,mg/l	5.4	5.6	5.6	5.4	5.50	0.14
21	Dissolved Phosphate (as P),mg/l	0.32	0.34	0.34	0.32	0.33	0.01
22	Iron (as Fe),mg/l	0.82	0.82	0.82	0.82	0.82	0.00
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.96	0.95	0.96	0.95	0.96	0.01
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY		AUTHORIZED SIGNATORY					

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Test Report				Report NO.- ITS/IREL-WW-18			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		TAKIRIABERHAMPUR-7					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.2	7.4	7.4	7.2	7.30	0.14
2	Temperature,@ 25°C	25.2	25.6	25.6	25.2	25.40	0.28
3	Turbidity, NTU	6.4	6.5	6.5	6.4	6.45	0.07
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	225	230	230	225	227.50	3.54
6	Total Dissolved Solids,mg/l	800	810	810	800	805.00	7.07
7	Total Suspended Solids,mg/l	22.2	22.4	22.4	22.2	22.30	0.14
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.6	2.3	2.6	2.3	2.45	0.21
10	Chemical Oxygen Demand,mg/l	18	20	20	18	19.00	1.41
11	Dissolved Oxygen,mg/l	5.8	5.3	5.8	5.3	5.55	0.35
12	Chloride as Cl, mg/l	61.4	61.7	61.7	61.4	61.55	0.21
13	Sulphate (as SO4),mg/l	32.4	32.3	32.4	32.3	32.35	0.07
14	Fluoride (as F),mg/l	0.26	0.26	0.26	0.26	0.26	0.00
15	Total Hardness (as CaCO3),mg/l	210	218	218	210	214.00	5.66
16	Calcium (as Ca),mg/l	54.6	54.4	54.6	54.4	54.50	0.14
17	Magnesium (as Mg),mg/l	15.5	15.5	15.5	15.5	15.50	0.00
18	Sodium (as Na),mg/l	52.8	52.9	52.9	52.8	52.85	0.07
19	Potassium (as K),mg/l	12.4	12.2	12.4	12.2	12.30	0.14
20	Total Nitrogen,mg/l	5.8	5.2	5.8	5.2	5.50	0.42
21	Dissolved Phosphate (as P),mg/l	0.25	0.21	0.25	0.21	0.23	0.03
22	Iron (as Fe),mg/l	0.72	0.76	0.76	0.72	0.74	0.03
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.8	0.85	0.85	0.8	0.83	0.04
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY 		AUTHORIZED SIGNATORY 					

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Test Report				Report NO.- ITS/IREL-WW-19			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		BADAARJYAPALLI-8					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.4	7.3	7.4	7.3	7.35	0.07
2	Temperature,@ 25°C	25.8	25.9	25.9	25.8	25.85	0.07
3	Turbidity, NTU	7.4	7.6	7.6	7.4	7.50	0.14
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	230	235	235	230	232.50	3.54
6	Total Dissolved Solids,mg/l	815	820	820	815	817.50	3.54
7	Total Suspended Solids,mg/l	20.6	20.8	20.8	20.6	20.70	0.14
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.8	2.8	2.8	2.8	2.80	0.00
10	Chemical Oxygen Demand,mg/l	22	24	24	22	23.00	1.41
11	Dissolved Oxygen,mg/l	5.5	5.6	5.6	5.5	5.55	0.07
12	Chloride as Cl, mg/l	60.2	60.8	60.8	60.2	60.50	0.42
13	Sulphate (as SO4),mg/l	37.8	37.9	37.9	37.8	37.85	0.07
14	Fluoride (as F),mg/l	0.26	0.27	0.27	0.26	0.27	0.01
15	Total Hardness (as CaCO3),mg/l	220	225	225	220	222.50	3.54
16	Calcium (as Ca),mg/l	50.2	50.4	50.4	50.2	50.30	0.14
17	Magnesium (as Mg),mg/l	17.8	17.9	17.9	17.8	17.85	0.07
18	Sodium (as Na),mg/l	42.4	42.2	42.4	42.2	42.30	0.14
19	Potassium (as K),mg/l	12.3	12.4	12.4	12.3	12.35	0.07
20	Total Nitrogen,mg/l	5.2	5.6	5.6	5.2	5.40	0.28
21	Dissolved Phosphate (as P),mg/l	0.24	0.23	0.24	0.23	0.24	0.01
22	Iron (as Fe),mg/l	0.82	0.84	0.84	0.82	0.83	0.01
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.88	0.84	0.88	0.84	0.86	0.03
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY 		AUTHORIZED SIGNATORY 					

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Test Report				Report NO.- ITS/IREL-WW-20			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		SANA ARJYAPALLI-9					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	6.5	6.4	6.5	6.4	6.45	0.07
2	Temperature,@ 25°C	26.1	26.3	26.3	26.1	26.20	0.14
3	Turbidity, NTU	7.4	7.7	7.7	7.4	7.55	0.21
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	206	208	208	206	207.00	1.41
6	Total Dissolved Solids,mg/l	775	780	780	775	777.50	3.54
7	Total Suspended Solids,mg/l	22.5	22.6	22.6	22.5	22.55	0.07
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.4	2.5	2.5	2.4	2.45	0.07
10	Chemical Oxygen Demand,mg/l	20	25	25	20	22.50	3.54
11	Dissolved Oxygen,mg/l	5.7	5.8	5.8	5.7	5.75	0.07
12	Chloride as Cl, mg/l	65.5	65.6	65.6	65.5	65.55	0.07
13	Sulphate (as SO4),mg/l	32.2	32.4	32.4	32.2	32.30	0.14
14	Fluoride (as F),mg/l	0.24	0.26	0.26	0.24	0.25	0.01
15	Total Hardness (as CaCO3),mg/l	224	224	224	224	224.00	0.00
16	Calcium (as Ca),mg/l	55.2	58.2	58.2	55.2	56.70	2.12
17	Magnesium (as Mg),mg/l	13.4	14.6	14.6	13.4	14.00	0.85
18	Sodium (as Na),mg/l	42.8	41.5	42.8	41.5	42.15	0.92
19	Potassium (as K),mg/l	13.8	13.2	13.8	13.2	13.50	0.42
20	Total Nitrogen,mg/l	6.9	6.5	6.9	6.5	6.70	0.28
21	Dissolved Phosphate (as P),mg/l	0.26	0.24	0.26	0.24	0.25	0.01
22	Iron (as Fe),mg/l	0.72	0.73	0.73	0.72	0.73	0.01
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.81	0.83	0.83	0.81	0.82	0.01
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY 		AUTHORIZED SIGNATORY 					

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Test Report				Report NO.- ITS/IREL-WW-21			
Surface/Ground water							
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha						
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024						
Sampling Done By	Mr. Suresh Pradhan						
Sample Description	Surface/ground water						
Sample Location	KANDRA ARJYAPALLI-10						
Sample Quantity	2 Liter						
Sampling period	APRIL 2025 to SEPTEMBER 2025						
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.82	7.85	7.85	7.82	7.84	0.02
2	Temperature,@ 25°C	26.1	26.6	26.6	26.1	26.35	0.35
3	Turbidity, NTU	7.5	10	10	7.5	8.75	1.77
4	Colour, Hazen	5	10	10	5	7.50	3.54
5	Alkalinity (as CaCO3), mg/l	230	240	240	230	235.00	7.07
6	Total Dissolved Solids,mg/l	845	852	852	845	848.50	4.95
7	Total Suspended Solids,mg/l	21.4	21.8	21.8	21.4	21.60	0.28
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	2.6	2.8	2.8	2.6	2.70	0.14
10	Chemical Oxygen Demand,mg/l	20	22	22	20	21.00	1.41
11	Dissolved Oxygen,mg/l	5.5	5.6	5.6	5.5	5.55	0.07
12	Chloride as Cl, mg/l	62.6	62.4	62.6	62.4	62.50	0.14
13	Sulphate (as SO4),mg/l	33.8	33.9	33.9	33.8	33.85	0.07
14	Fluoride (as F),mg/l	0.28	0.24	0.28	0.24	0.26	0.03
15	Total Hardness (as CaCO3),mg/l	210	215	215	210	212.50	3.54
16	Calcium (as Ca),mg/l	55.6	55.2	55.6	55.2	55.40	0.28
17	Magnesium (as Mg),mg/l	15.8	15.3	15.8	15.3	15.55	0.35
18	Sodium (as Na),mg/l	51.6	51.7	51.7	51.6	51.65	0.07
19	Potassium (as K),mg/l	15.2	15.1	15.2	15.1	15.15	0.07
20	Total Nitrogen,mg/l	5.2	5.3	5.3	5.2	5.25	0.07
21	Dissolved Phosphate (as P),mg/l	0.2	0.25	0.25	0.2	0.23	0.04
22	Iron (as Fe),mg/l	0.78	0.7	0.78	0.7	0.74	0.06
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.84	0.81	0.84	0.81	0.83	0.02
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.01	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY 		AUTHORIZED SIGNATORY 					

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TC-11181

Test Report				Report NO.- ITS/IREL-WW-22			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		NALIANUAGAM-11					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.5	7.1	7.5	7.1	7.30	0.28
2	Temperature,@ 25°C	25.3	25.9	25.9	25.3	25.60	0.42
3	Turbidity, NTU	7.2	7.2	7.2	7.2	7.20	0.00
4	Colour, Hazen	5	5	5	5	5.00	0.00
5	Alkalinity (as CaCO3), mg/l	252	230	252	230	241.00	15.56
6	Total Dissolved Solids,mg/l	830	825	830	825	827.50	3.54
7	Total Suspended Solids,mg/l	22.6	22.3	22.6	22.3	22.45	0.21
8	Oil & Grease,mg/l	<1	<1	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	3.4	3.1	3.4	3.1	3.25	0.21
10	Chemical Oxygen Demand,mg/l	25	26	26	25	25.50	0.71
11	Dissolved Oxygen,mg/l	6.2	6.8	6.8	6.2	6.50	0.42
12	Chloride as Cl, mg/l	61.1	61.5	61.5	61.1	61.30	0.28
13	Sulphate (as SO4),mg/l	35.6	35.8	35.8	35.6	35.70	0.14
14	Fluoride (as F),mg/l	0.28	0.28	0.28	0.28	0.28	0.00
15	Total Hardness (as CaCO3),mg/l	240	224	240	224	232.00	11.31
16	Calcium (as Ca),mg/l	51.2	52.3	52.3	51.2	51.75	0.78
17	Magnesium (as Mg),mg/l	18.3	18.1	18.3	18.1	18.20	0.14
18	Sodium (as Na),mg/l	42.7	44.3	44.3	42.7	43.50	1.13
19	Potassium (as K),mg/l	15.3	15.6	15.6	15.3	15.45	0.21
20	Total Nitrogen,mg/l	5.4	5.8	5.8	5.4	5.60	0.28
21	Dissolved Phosphate (as P),mg/l	0.22	0.24	0.24	0.22	0.23	0.01
22	Iron (as Fe),mg/l	0.73	0.72	0.73	0.72	0.73	0.01
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.88	0.82	0.88	0.82	0.85	0.04
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.01	<0.1	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY 		AUTHORIZED SIGNATORY 					

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Test Report				Report NO.- ITS/IREL-WW-2			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		TAMPARA LAKE-12					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.35	7.34	7.35	7.34	7.35	0.01
2	Temperature, @ 25°C	26.8	26.5	26.8	26.5	26.65	0.21
3	Turbidity, NTU	12	12.5	12.5	12	12.25	0.35
4	Colour, Hazen	20	15	20	15	17.50	3.54
5	Alkalinity (as CaCO3), mg/l	182	188	188	182	185.00	4.24
6	Total Dissolved Solids,mg/l	725	730	730	725	727.50	3.54
7	Total Suspended Solids,mg/l	35	40	40	35	37.50	3.54
8	Oil & Grease,mg/l	<3.0	<3.0	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	4.6	4.8	4.8	4.6	4.70	0.14
10	Chemical Oxygen Demand,mg/l	60	65	65	60	62.50	3.54
11	Dissolved Oxygen,mg/l	5.8	5.7	5.8	5.7	5.75	0.07
12	Chloride as Cl, mg/l	68	65	68	65	66.50	2.12
13	Sulphate (as SO4),mg/l	35	40	40	35	37.50	3.54
14	Fluoride (as F),mg/l	0.34	0.32	0.34	0.32	0.33	0.01
15	Total Hardness (as CaCO3),mg/l	176	178	178	176	177.00	1.41
16	Calcium (as Ca),mg/l	44.7	44.8	44.8	44.7	44.75	0.07
17	Magnesium (as Mg),mg/l	15.2	15.1	15.2	15.1	15.15	0.07
18	Sodium (as Na),mg/l	43.4	43.6	43.6	43.4	43.50	0.14
19	Potassium (as K),mg/l	2.2	2.4	2.4	2.2	2.30	0.14
20	Total Nitrogen,mg/l	9.8	9.1	9.8	9.1	9.45	0.49
21	Dissolved Phosphate (as P),mg/l	0.54	0.52	0.54	0.52	0.53	0.01
22	Iron (as Fe),mg/l	0.72	0.71	0.72	0.71	0.72	0.01
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.86	0.88	0.88	0.86	0.87	0.01
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0

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Test Report				Report NO.- ITS/IREL-WW-24			
Surface/Ground water							
Name and address		M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha					
Work Order No.		GEMC 511687709360706/07/SC-11684, Dated-19.11.2024					
Sampling Done By		Mr. Suresh Pradhan					
Sample Description		Surface/ground water					
Sample Location		PORT POND-13					
Sample Quantity		2 Liter					
Sampling period		APRIL 2025 to SEPTEMBER 2025					
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	7.55	7.86	7.86	7.55	7.71	0.22
2	Temperature,@ 25°C	26.6	26.9	26.9	26.6	26.75	0.21
3	Turbidity, NTU	10	15	15	10	12.50	3.54
4	Colour, Hazen	20	20	20	20	20.00	0.00
5	Alkalinity (as CaCO3), mg/l	184	188	188	184	186.00	2.83
6	Total Dissolved Solids,mg/l	752	760	760	752	756.00	5.66
7	Total Suspended Solids,mg/l	46	50	50	46	48.00	2.83
8	Oil & Grease,mg/l	<3.0	<3.0	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	6.4	6.8	6.8	6.4	6.60	0.28
10	Chemical Oxygen Demand,mg/l	60	68	68	60	64.00	5.66
11	Dissolved Oxygen,mg/l	6.4	6.2	6.4	6.2	6.30	0.14
12	Chloride as Cl, mg/l	68	68	68	68	68.00	0.00
13	Sulphate (as SO4),mg/l	46	43	46	43	44.50	2.12
14	Fluoride (as F),mg/l	0.32	0.38	0.38	0.32	0.35	0.04
15	Total Hardness (as CaCO3),mg/l	168	170	170	168	169.00	1.41
16	Calcium (as Ca),mg/l	42.2	42.8	42.8	42.2	42.50	0.42
17	Magnesium (as Mg),mg/l	17.2	17.2	17.2	17.2	17.20	0.00
18	Sodium (as Na),mg/l	46.3	46.4	46.4	46.3	46.35	0.07
19	Potassium (as K),mg/l	2.9	2.6	2.9	2.6	2.75	0.21
20	Total Nitrogen,mg/l	8.2	8.3	8.3	8.2	8.25	0.07
21	Dissolved Phosphate (as P),mg/l	0.53	0.54	0.54	0.53	0.54	0.01
22	Iron (as Fe),mg/l	0.78	0.73	0.78	0.73	0.76	0.04
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.74	0.72	0.74	0.72	0.73	0.01
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY		AUTHORIZED SIGNATORY					

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Test Report				Report NO.- ITS/IREL-WW-25			
Surface/Ground water							
Name and address	M/s. IREL (INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha						
Work Order No.	GEMC 511687709360706/07/SC-11684, Dated-19.11.2024						
Sampling Done By	Mr. Suresh Pradhan						
Sample Description	Surface/ground water						
Sample Location	SEA WATER						
Sample Quantity	2 Liter						
Sampling period	APRIL 2025 to SEPTEMBER 2025						
S.No	Parameter	June	Sep	Max	Min	Average	SD
1	pH Value @ 25°C	8.25	8.1	8.25	8.1	8.18	0.11
2	Temperature,@ 25°C	26.2	26.8	26.8	26.2	26.50	0.42
3	Turbidity, NTU	15.2	15.3	15.3	15.2	15.25	0.07
4	Colour, Hazen	24	25	25	24	24.50	0.71
5	Alkalinity (as CaCO3), mg/l	115	125	125	115	120.00	7.07
6	Total Dissolved Solids,mg/l	34325	34480	34480	34325	34403	109.60
7	Total Suspended Solids,mg/l	52	60	60	52	56.00	5.66
8	Oil & Grease,mg/l	<3	<3	0	0	<3.0	<1.0
9	Biochemical Oxygen Demand,mg/l	5.2	5.8	5.8	5.2	5.50	0.42
10	Chemical Oxygen Demand,mg/l	26	28	28	26	27.00	1.41
11	Dissolved Oxygen,mg/l	5.8	5.7	5.8	5.7	5.75	0.07
12	Chloride as Cl, mg/l	16925	17840	17840	16925	17383	647.00
13	Sulphate (as SO4),mg/l	3840	3860	3860	3840	3850	14.14
14	Fluoride (as F),mg/l	0.84	0.88	0.88	0.84	0.86	0.03
15	Total Hardness (as CaCO3),mg/l	6900	7100	7100	6900	7000	141.42
16	Calcium (as Ca),mg/l	360	380	380	360	370	14.14
17	Magnesium (as Mg),mg/l	1560	1640	1640	1560	1600	56.57
18	Sodium (as Na),mg/l	9850	9880	9880	9850	9865	21.21
19	Potassium (as K),mg/l	490	510	510	490	500	14.14
20	Total Nitrogen,mg/l	13.6	13.2	13.6	13.2	13.40	0.28
21	Dissolved Phosphate (as P),mg/l	0.62	0.61	0.62	0.61	0.62	0.01
22	Iron (as Fe),mg/l	1.21	1.32	1.32	1.21	1.27	0.08
23	Copper (as Cu),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
24	Cadmium (as Cd),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
25	Lead (as Pb),mg/l	<0.01	<0.01	0	0	<0.01	<0.01
26	Zinc (as Zn),mg/l	0.88	0.83	0.88	0.83	0.86	0.04
27	Total Chromium as Cr,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
28	Hexavalent Chromium (as Cr+6),mg/l	<0.1	<0.1	0	0	<0.1	<0.1
29	Phenolic Compounds ,mg/l	<0.01	<0.01	0	0	<0.01	<0.01
30	Total Residual Chlorine,mg/l	<0.1	<0.1	0	0	<0.1	<0.1
31	Escherichia coli	<2.0	<2.0	0	0	0.00	<2.0
32	Coliform Bacteria	<2.0	<2.0	0	0	0.00	<2.0
CHECKED BY		AUTHORIZED SIGNATORY					

Terms & Conditions :

1. Test reports are valid only for the samples tested in our laboratory. 2. Samples will be destroyed as per quality policy.
3. Any complaints about the report should be communicated in writing within 7 days.
4. Total liability of our laboratory is limited to invoiced amount.

Government of India
Bhabha Atomic Research Centre
Health Physics Division,
Radiation Protection Section (NF)
(Health Physics Unit, IREL (India) Limited, OSCOM)

Ref: HPU/03(08)/ 755

Date: 22/10/2025

(a) Noise level monitored during the period
April 2025 to September 2025

Sl. No.	Area Monitored	Exact Location	Noise Level dB(A)	Duration of Exposure	Personal Protective Equipment's used
01	Dredge & Wet up gradation Plant (General Area)	Skid Base Area	54-87	8 hrs.	Ear Muff/ Ear Plug
02	Dredge & Wet upgradation Plant (Other Area)	Control Room	68-94	8 hrs.	Ear Muff/ Ear Plug
03	Mineral Separation Plant (General Area)	Shift Office Room	75-89	8 hrs.	Ear Muff/ Ear Plug
04	Mineral Separation Plant (At 12 m, near IRMS)	Near IRMS	70-99	8 hrs.	Ear Muff/ Ear Plug
05	Mineral Separation Plant (Near Air Table)	General area	80-86	Occasional	Ear Muff/ Ear Plug
06	Mineral Separation Plant (Near Vibrating Screen)	Vibrating Screen	78-86	8 hrs.	Ear Muff/ Ear Plug
07	Compressor House REEP	At REEP	94-111	Occasional	Ear Muff/ Ear Plug
08	Compressor House REEP (Operator Room)	At REEP	60-79	8 hrs.	
09	Attack Plant REEP (General Area)	Middle Area of Process Building (GF)	82-91	Occasional	Ear Muff/ Ear Plug
10	Active Plant REEP (General Area)	Middle Area of Process Building (GF)	76-94	8 hrs.	Ear Muff/ Ear Plug
11	Active Plant REEP (Scrubber Fan Area)	Near Scrubber Fan	84-103	Occasional	Ear Muff/ Ear Plug
12	Boiler House (General Area)	In Side Boiler House	82-97	8 hrs.	Ear Muff/ Ear Plug
13	Workshop (General Area)	Carpentry area in general	51-67	8 hrs.	
14	Auto shop (General Area)	Near Auto pool Area	48-69	8 hrs.	

TLV-85 dB(A)/ 8 hrs.

(b) Radiation level monitored during the period April 2025 to September 2025

Sl. No	Location	Gamma Exposure Rate ($\mu\text{Gy.h}^{-1}$)	
		Contact	1m away
1.1	Mining Area (Before Mining)	--	0.4 - 1.6
1.2	Mined Out Area (After Mining)	--	0.1 - 0.2
2	MINERAL SEPARATION PLANT		
2.1	Ground Floor (In General)	--	0.5 - 2.8
2.2	4.5 m Level (In General)	--	1.6 - 3.0
2.3	9.0 m Level (In General)	--	1.5 - 5.0
2.4	12.0 m Level (In General)	--	2.0 - 4.5
2.5	16.0 m Level (In General)	--	1.0 - 2.0
2.6	Monazite Trench	--	20 - 50
2.7	Reject Disposal Site	--	--
3	REEP		
3.1	Monazite Stores	62 - 190	8 - 90
3.2	Feed Area	12 - 30	1.5 - 20.0
3.3	Attack Plant in general	4 - 30	0.4 - 15.0
3.4	Control room Attack Plant	--	0.1 - 0.8
3.5	RE Chloride Plant/Stores	--	0.1 - 0.6
3.4	Active Plant GF	--	15 - 160
3.5	Active Plant Top	--	10 - 30
3.6	Active Plant Control room	--	0.3 - 1.7
3.7	Uranium - Thorium separation section	--	0.4 - 2.5
3.8	Uranium - Section	--	0.3 - 8.0
3.9	Thorium section	--	2 - 34
3.1	Product Stores	--	7 - 10
3.11	Solid Waste Stacking Area(temp)	10.0 - 30.0	3.0 - 15
3.12	Solid Waste Trench	1 - 230	0.5 - 25
3.13	Sodium nitrate storage pond area	--	3 - 12
3.14	REEP-Effluent treatment plant	--	0.2 - 1.9
3.15	REEP Office Area	--	0.1 - 0.5
4	Boiler House	--	0.1 - 1.2
5	Workshop Area	--	0.2 - 0.3

(c) Analysis of Soil Samples collected during the period
April 2025 to September 2025

Sl.No	Location	Period	Analysis Details	
			Gross α , Bq/g	Gross β , Bq/g
01	Mining Area	April 2025 to June 2025	2.24	2.12
02	Mined Out Area		0.65	1.64
03	Matikhalo Village Area		1.16	1.72
04	Kanamana Village		2.22	3.72
05	Solid Waste Trench area		2.07	2.68
06	Sodium Nitrate Storage Pond area		2.72	3.34

Sl.No	Location	Period	Analysis Details	
			Gross α , Bq/g	Gross β , Bq/g
01	Mining area	July 2025 to September 2025	2.10	2.67
02	Mined Out Area		0.59	0.82
03	Matikhalo Village Area		1.10	2.19
04	Kanamana Village		1.82	2.14
05	Solid Waste Trench area		1.86	2.19
06	Sodium Nitrate Storage Pond area		3.28	3.45

(d) Water activity level monitored during
April 2025 to September 2025

Sl.No	Location	Activity Levels (Bq/L)	
		Gross α	Gross β
1	Matikhalo	0.09	0.58
2	Badaputty	0.08	0.64
3	Basanaputty	0.08	0.69
4	T Berhampur	0.13	0.66
5	K Arjipalli	0.06	0.46
6	Bada Arjipalli	0.08	0.61
7	Kanamana	0.10	0.59
8	Dredge Pond	-	-
9	Lily pond	0.12	0.46
10	OPHD	0.06	0.45
11	Pond-1	0.49	0.93
12	RPP pit	-	-
13	MOPP-UP	0.38	0.78
14	MOPP-DOWN	0.89	0.86
15	Bore hole near platform	0.27	0.65
16	Composite MSP	-	-
17	SEP-UP	0.35	0.77
18	SEP-DOWN	0.30	0.70
19	SWT-UP	0.15	0.63

TLV- Gross α = 0.1 Bq/l Gross β = 1.0 Bq/l

For
Annapurna Rout.

(Abinash Sahu)
OIC, HPU

To
I/C TS.

CC: GM & Head, OSCOM for kind information.

O/C

Ref: IREL/Med/403

Date: 9th May 2025**Disease Profile Analysis for the Year 2024**

1. Disease Profile Analysis of OSCOM Unit for the year 2024 is submitted below.
2. Data have been collected from various registers maintained at OHC & FHC. The picture thus emerged by analyzing all types of diseases are submitted as below:-

S. No	CATEGORIES OF DISEASE OBSERVED	REGULAR EMPLOYEES, OISF, HPU, AECS, DEPENDENTS					CONTRACT WORKERS & OTHERS				
		OHC	FHC	Total	Total Patient	%	OHC	FHC	Total	Total Patient	%
1	DIARRHOEA & DYSENTRY	102	265	367	7438	4.93	154	155	309	5462	5.65
2	PARASITIC/ INFECTION	13	45	58	7438	0.77	05	11	16	5462	0.29
3	DYSPEZIA & FLATULENCE	06	33	39	7438	0.52	09	09	18	5462	0.32
4	A P D / HYPERACIDITY	260	433	693	7438	9.31	166	234	400	5462	7.32
5	ENTERIC FEVER	01	03	04	7438	0.05	37	00	37	5462	0.67
6	MALARIA FEVER	02	04	06	7438	0.08	00	00	00	5462	0.00
7	OTHER FEVER CASES	69	256	325	7438	4.36	246	247	493	5462	9.02
8	COMMON COLD	250	620	870	7438	11.69	540	473	1013	5462	18.54
9	OTHER RESPIRATORY INFECTION	243	543	786	7438	10.56	290	336	626	5462	11.46
10	URINARY TRACT INFECTION	18	45	63	7438	0.84	05	12	17	5462	0.31
11	BRONCHIAL ASTHMA	10	29	39	7438	0.52	10	37	47	5462	0.86
12	HYPERTENSION	143	206	349	7438	4.69	50	60	110	5462	2.01
13	HYPOTENSION	11	13	24	7438	0.32	03	02	05	5462	0.09
14	CARDIAC CASES	13	12	25	7438	0.33	09	01	10	5462	0.18
15	DIABETES MELLITUS	23	178	201	7438	2.70	14	69	83	5462	1.51
16	TUBERCULOSIS	00	01	01	7438	0.00	00	00	00	5462	0.00
17	HENSENS' DISEASES	00	00	00	7438	0.00	00	00	00	5462	0.00
18	SKIN DISEASES										
	A. FUNGAL INFECTION	40	198	238	7438	3.19	15	62	77	5462	1.40
	B. SCABIES	02	05	07	7438	0.09	00	03	03	5462	0.05
	C. ECZEMA (ALLIED etc.)	01	02	03	7438	0.04	01	02	03	5462	0.05
	D. LEUCODERMA	00	00	00	7438	0.00	00	00	00	5462	0.00
19	PROTEIN CALORIE DEFICIENCY	00	00	00	7438	0.00	00	00	00	5462	0.00
20	VITAMIN DEFICIENCY	00	00	00	7438	0.00	00	00	00	5462	0.00
21	ANEMIA	00	14	14	7438	0.18	15	03	18	5462	0.32
22	HEPATITIS (JAUNDICE)	00	00	00	7438	0.00	00	02	02	5462	0.03
23	ALLERGIC DISEASES										
	A. DRUG ALLERGIC	00	05	05	7438	0.06	06	03	09	5462	0.16
	B. URTICARIAS etc.	11	34	45	7438	0.60	05	11	16	5462	0.29
24	FILARIASIS	00	00	00	7438	0.00	00	00	00	5462	0.00
25	VENEREAL DISEASES	00	00	00	7438	0.00	00	00	00	5462	0.00
26	CHRONIC ARTHRITIS										
	A. LIMB JOINTS	68	196	264	7438	3.54	126	125	251	5462	4.59
	B. VERTEBRAL JOINTS	36	41	77	7438	1.03	59	31	90	5462	1.64
27	PSYCHIATRIC CASES / EPILEPSY	04	02	06	7438	0.08	00	01	01	5462	0.01

Contd.....2/-

Contd.....2/-

Disease Profile Analysis for the Year 2024

S. No	CATEGORIES OF DISEASE OBSERVED	REGULAR EMPLOYEES, OISF, HPU, AECS, DEPENDENTS					CONTRACT WORKERS & OTHERS				
		OHC	FHC	Total	Total Patient	%	OHC	FHC	Total	Total Patient	%
28	EYE DISEASES										
	A. EYE INFECTIONS	56	125	181	7438	2.43	170	60	230	5462	4.21
	B. EYE INJURY	00	01	01	7438	0.01	00	06	06	5462	0.10
	C. DEFECTIVE VISIONS	48	18	66	7438	0.88	56	15	71	5462	1.29
29	DENTAL INFECTIONS	30	41	71	7438	0.95	20	20	40	5462	0.73
30	EAR INFECTIONS (CSOM / ASOM)	10	34	44	7438	0.59	12	19	31	5462	0.56
31	PILES	15	09	24	7438	0.32	03	05	08	5462	0.14
32	MENSTRUAL DISORDERS	14	26	40	7438	0.53	07	05	12	5462	0.21
33	DISLOCATIONS & SPRAINS	00	54	54	7438	0.72	60	31	91	5462	1.66
34	BURNS & SCALDS	06	18	24	7438	0.32	12	10	22	5462	0.40
35	INJURY INCIDENTS	35	75	110	7438	1.47	98	68	166	5462	3.03
36	NEUROLOGICAL DEFICIENCIES	06	00	06	7438	0.08	01	01	02	5462	0.03
37	MALIGNANCY	07	00	07	7438	0.09	00	00	00	5462	0.00
38	CONGENITAL ANOMALY	00	00	00	7438	0.00	00	00	00	5462	0.00
39	NOTIFIABLE DISEASES	00	00	00	7438	0.00	00	00	00	5462	0.00
40	MISC CASES	54	73	127	7438	1.72	44	39	83	5462	1.52

3. The above is for your information please.

7438

[Signature]

Dr (Lt Col) B Subha
Manager & HoD (Med)
for IREL (India) Limited / OSCOM

Copy: Internal (Disease Profile File)/RKP

To,
Shri PK Mishra
Chief Manager (Tech Services) & MR



IREL (India) Limited
Six Monthly Compliance Report (April 2025 to September 2025)

Ref : Details of Afforestation & Green belt Development

YEAR	Area mined (Ha)	Area planted in, (Ha)			No. of trees Planted		
		Mined out area	Others (Plant & colony)	Total	Mined out area	Others (Plant & colony)	Total
1987-88	4.0	7.0	--	7.0	14,000	--	14,000
1988-89	5.0	10.0	--	10.0	20,000	--	20,000
1989-90	8.0	7.5	--	7.5	15,000	--	15,000
1990-91	6.0	3.0	--	3.0	6,000	--	6,000
1991-92	12.0	8.5	--	8.5	16,500	--	16,500
1992-93	8.0	14.5	--	14.5	29,000	--	29,000
1993-94	6.67	9.88	--	9.88	25,000	--	25,000
1994-95	12.92	8.23	3.0	11.23	40,000	8,500	48,500
1995-96	16.94	8.5	--	8.5	42,000	--	42,000
1996-97	11.7	8.5	2.0	10.5	40,000	6,000	46,000
1997-98	15.5	8.5	3.0	11.5	40,000	5,000	45,000
1998-99	14.16	9.0	4.4	13.4	45,000	5,000	50,000
1999-2000	12.42	5.0	--	5.0	50,900	--	50,900
2000-2001	20.94	7.5	1.5	9.0	74,800	3,575	78,375
2001-2002	13.12	10.23	--	10.23	80,000	1,959	81,959
2002-2003	14.51	16.8	--	16.8	75,300	--	75,300
2003-2004	17.25	18.5	Avenue plantation	18.5	82,000	400	82,400
2004-2005	26.76	18.0	Avenue plantation	18.0	80,000	500	80,500
2005-2006	21.02	17.0	0.24	17.24	75,600	5,500	81,100
2006-2007	25.2	21.47	0.13	21.6	95,553	5,500	1,01,053
2007-2008	22.11	22.68	--	22.68	1,00,583	229	1,00,812
2008-2009	24.62	16.95	Avenue plantation	16.95	75,130	5,400	80,530
2009-2010	28.45	24.89	--	24.89	1,10,623	--	1,10,623
2010-2011	28.73	13.79	--	13.79	59,482	--	59,482
2011-2012	25.03	18.61	--	18.61	84,523	--	84,523
2012-2013	26.55	16.0	0.5	16.5	60,674	640	61,314
2013-2014	24.86	10	--	10	62,870	--	62,870
2014-2015	35.42	20	0.12	20.12	54,500	300	54,800
2015-2016	32.78	22	0.5	22.5	54,000	500	54,500
2016-2017	29.44	32	Avenue plantation	32.0	80,000	200	80,200
2017-2018	33.32	16	--	16	40,600	--	40,600
2018-2019	63.94	22	0.1	22.1	54,900	200	55,100
2019-2020	24.28	23	0.6	24.88	56000	600	56,600
2020-2021	22.5	20.23	1.53	21.76	50,000	3800	53,800
2021-2022	20.44	20.44	.....	20.44	50,500	.....	50,500
2022-2023	30.35	30.35	.....	30.35	75,500	.....	75,500
2023-2024	40.46	40.46	1.0	41.46	100500	1000	101500
2024-2025	40.46	40.46	----	----	----	----	100000



IREL (India) Limited
Six Monthly Compliance Report (April 2025 to September 2025)

Ref: Details of Raw Materials used, Production & Waste Generation from OSCOM & REEP during the period: April 2025 to September 2025.

A. List of the raw materials used for OSCOM & REEP

Sl.No.	<i>Description</i>		<i>During April-2025 to September-2025</i>
1	Mining		
1.1	Raw sand, t	(For production of upgraded heavy minerals consisting of ilmenite, rutile, zircon, sillimanite, RE Mineral, garnet etc.)	31,33,179
2	MSP		
2.1	Furnace oil, KL	(For production of ilmenite, rutile, zircon, sillimanite, garnet etc.)	3100.8
2.2	Sodium chloride, Kg	(For production of sillimanite)	18700
2.3	Soda ash, Kg	-do-	7010
2.4	Sodium silicate, Kg	-do-	5200
2.5	Oleic acid, Kg	-do-	8555
3	REEP & Boiler		
3.1	RE mineral,t	For processing & production total products in REEP	2969.7
3.2	Hydrochloric acid (~30% w/w), t	For production of Rare earths chloride etc.	4011.43
3.3	Barium chloride, Kg	For production of Rare earths (RE) chloride.	37890
3.4	Sodium sulphide, Kg		36050
3.5	Magnesium Sulphate, Kg		35850
3.6	Iron powder, Kg		5500
3.7	Sodium sulphate, Kg	For TSP production	27400
3.8	Caustic lye, t	For production Rare earths chloride, Tri-sodium Phosphate etc.	4012.68
3.9	RE Mineral Oxalate, t	For production of RE mineral Nitrate	NIL
3.10	Nitric acid, t		32.622
3.11	Soda ash, t		46.95



IREL (India) Limited

Six Monthly Compliance Report (April 2025 to September 2025)

3.12	Hydrogen peroxide, Kg	For solvent extraction purpose	1140
3.13	Alamine, Ltr		200
3.14	Oxalic acid, t		141.925
3.15	Flocculants, Kg (Flomine & Kemfloc)		777.4
3.16	Tri-n-butyl phosphate(TBP), Kg		NIL
3.17	Petrofin, Ltr		NIL
3.18	Isodecanol, Ltr		100
3.19	Ammonia, Kg		1550
3.20	EDTA, Kg		265.92
3.21	DTPA, Kg		168.99
3.22	Hydrochloric acid (~30% w/w), t	For DM Plant	Included above
3.23	Sodium hydroxide, t		Included above
3.24	Coal, t	For steam generation	11411

B. Production

(During the period April 2025 to September 2025):

Sl.No	Description	Quantity						
OSCOM								
MINING		April'25	May'25	June'25	July'25	Aug'25	Sept'25	TOTAL (t)
1.	Heavy Mineral Output, t	51187	55080	59795	60324	52087	63465	341938
MSP								
1	Ilmenite, t	20422	25670	23208	23989	20258	24552	138099
2	Rutile, t	655	825	680	808	621	714	4303
3	Sillimanite, t	1444	1833	1447	1801	1687	1765	9977
4	Zircon, t	438	663	599	610	454	450	3214
5	RE Mineral, t	189	321	257	207	254	315	1543
6	Garnet, t	5884	6870	5968	7024	5801	7551	39098
REEP								
1.	Tri Sodium Phosphate, t	470	537	610	606	618	605	3446
2.	Rare Earths Chloride, t	401	465	502	433	485	483	2769



IREL (India) Limited
Six Monthly Compliance Report (April 2025 to September 2025)

C. Solid Waste & Radioactive Waste generation:

(During the period April 2025 to September 2025):

Sl. No	Description	Quantity	Disposal activity
OSCOM			
MINING	Tails generated, t	27,91,241	For back filling.
MSP	Subgrade minerals, t	MSP:70,113 HUS:1,14,692	
REEP & Boiler			
1.	ETP cake, t	34.04	
2.	Iron Carbonate cake, t	39.37	
3.	Lead Barium cake, t	220.1	
4.	Insoluble Muck cake, t	726.3	
5.	Ash from Boiler, t	2616	

HUS: Heavy up gradation section, MSP: Mineral separation plant

D. Liquid Waste generation:

(During the period April 2025 to September 2025):

Sl. No	Description	Quantity	Disposal activity
OSCOM			
MSP	Waste water, m ³	6,09,856	
REEP & Boiler			
1.	Non-Nitrate Effluent ,m ³	1560	
2.	Nitrate Effluent, m ³	131.9	