



आईआरईएल (इंडिया) लिमिटेड  
IREL (India) Limited  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Government of India Undertaking)

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

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



TS/ENVR/OSCOM/ 1487A

8<sup>th</sup> June 2022

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 Mining & Mineral Separation Units of OSCOM.  
Ref.-i. MoEF&CC letter no. 21/18/84 ENI/IA II dated 14th May 1991.  
ii. Our compliance report TS/ENVR/05/OSCOM/4943A dated 23<sup>rd</sup> November 2018.  
iii. MoEF&CC Environmental Clearance (EC) letter No.J-11015/528/2007-IA.II(M) dated 11<sup>th</sup> January 2019 for capacity expansion of Mining & Mineral Separation Units.

This has reference to the above subject & references we are herewith enclosing the compliance report for OSCOM operation for the period October 2021 to March 2022 for your kind information.

Accordingly, OSPCB issued a Consent Order No.695/CTO-48/2014 dated 01.03.20219 for production capacity of 3,96,000 TPA of total heavy minerals comprising of heavy minerals e.g Ilmenite, Rutile, Zircon, Sillimanite, Monazite & Garnet.

As advised, we are also submitting the soft-copy to email ID – [roez.bsr-mef@nic.in](mailto:roez.bsr-mef@nic.in) for kind information.

With Kind Regards

Yours truly,  
For IREL (India) Limited,

Executive Director

12/6/2022  
12/6/2022

उड़ीसा सैंड्स कॉम्प्लेक्स, माटिखालो (डाक) छत्रपुर (गंजाम), ओडिशा - 761045, भारत  
Orissa Sands Complex, Matikhalo (P.O) Chatrapur (Ganjam), Odisha-761045  
फोन/Tel.: 06811-257890-95 फैक्स/Fax: 06811-257988

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धि विनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028  
Regd. Office : Plot no:1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai-400 028



# IREL (India) Limited

## Six Monthly Compliance Report (October 2021 to March 2022)

### 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. MoEF letter no.21/18/84 ENI/IA II dated 14<sup>th</sup> May 1991 & No.J-14011/5/91/IA-II dated 7th Apr'2000 for Mining & Mineral Separation of IREL, OSCOM.
- ii. Environmental Clearance(EC) vide letter No.J-11015/528/2007- IA.II(M) dated 11<sup>th</sup> January 2019 for capacity expansion of Mining & Mineral Separation Units.

Period of Compliance Report: **October 2021 to March 2022**

Sub: Compliance of various points raised by MoEF letter no.21/18/84 ENI/IA II dated 14<sup>th</sup> May 1991 & No.J-14011/5/91/IA- II dated 7th Apr'2000 for Mining & Mineral Separation of IREL, OSCOM.

S.No.	Description of Conditions	Status
I	The project authority must strictly adhere to the stipulations made by the State Pollution Control Board and the State Government.	The Consent Order No. 636/2021 dated 19.03.2021, issued by Odisha State Pollution Control Board (OSPCB) under Water & Air Act, is having validity upto 31.3.2026. All the conditions mentioned in the Consent Order and directives issued time to time by OSPCB are being strictly followed.
ii	Any expansion of the plant, either with the existing product mix or new product can be taken up only with the prior approval of the Ministry.	Agreed. MoEF & CC has already issued Environmental Clearance(EC) vide letter No.J-11015/528/2007-IA.II(M) dated 11 <sup>th</sup> January 2019 for capacity expansion of Mining & Mineral Separation Units.
iii	The project authority must, submit comprehensive EIA, report for the proposed, activity along with any further activity proposed/approved by the Ministry within one year i.e. by 14.5.1992	Comprehensive EIA & EMP report was prepared for OSCOM operation and submitted to MoEF, New Delhi vide our letter No. TS/Envir/4669-A dated 26 <sup>th</sup> April 1994 to MoEF Regional Office (Eastern Zone), Bhubaneswar vide our letter No.TS/Envir/7401-A dated 24 <sup>th</sup> June 1994.
iv	The gaseous emissions from various process unit conform to the standard prescribed by the concerned authorities, from time to time. At no time the emission level should go beyond the stipulated standards. In event of failure of any pollution control system adopt in the unit, the respective unit should be put out of operation immediately and should not be restarted until the concerned measures are rectified to achieve the desired efficiencies.	Gaseous emissions: Gaseous emissions from Mineral Separation Plant (MSP) are maintained strictly as per the conditions stipulated by Odisha State Pollution Control Board. The Particulate Matter (PM) values in the stack emissions were found within the permissible limit of 150mg/m <sup>3</sup> during the Period: Oct'21 to Mar'22. The monitoring report on stack emissions during the period Period: Oct'21 to mar'22 is enclosed in Annexure-2.



## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

S.No.	Description of Conditions	Status
v	Adequate number (a minimum 3 to 5) of air quality monitoring stations should be set up in the downwind direction as well as where maximum ground level contend is anticipated. Also the manual monitoring of stack emissions should be carried out at regular intervals. The result of monitoring should be statistically analysed and submitted to Pollution Control Board, every three months and to this Ministry every six months.	Five no of Air Quality Monitoring (AQM) stations monitoring is being carried out by M/s Centre for Envotech & Management Consultancy Pvt.Ltd., Bhubaneswar, a NABL accredited & MoEF&CC authorized agency, at four stations (Mining area( south sector), IREL Colony, Bada Arjipalli & Kanamana, Mining area (North) and in plant area on regular basis. The data for the period: : Oct'21 to Mar'22 is enclosed in Annexure-2.From the monitoring data it is seen that the PM <sub>10</sub> levels are within the norm of 100 µg/m <sup>3</sup> and PM <sub>2.5</sub> levels are within the norm of 60 µg/m <sup>3</sup> .
vii	Radiation levels at different location of the plant at full production level should be predicted and a report should be submitted to this department by 31.12.1991.	<p>Radiation level: Prediction of radiation levels at different locations of the Plant at full production is already informed to the Ministry vide our letter No.TS/Envir/11714A dated 30th September 1991.</p> <p>Radiation levels during the period: Oct'21 to Mar'22 is enclosed in Annexure-2. From the monitoring data, it is seen that the radiation level in the mining area, before mining was 0.5 to 0.7 µGy/h which reduced to 0.05 to 0.1 µGy/h after carrying out the mining activity.</p>
viii	The project authorities will submit a report every six months regarding complaints if any made by people who are living within 3 Kms radius.	No complaint received during the period: Oct'21 to Mar'22.
ix	The project authorities will submit health survey report of the employees as well as random sample of people who are living within three Kilometers. The survey should be carried out as per guidelines of Health Physics Division/ Atomic Energy Regulatory Board.	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 2021 are 5582. 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 period Jan 2021 to Dec 2021 are 3231. The annual disease profile of the local village & employee's area is enclosed herewith as Annexure-2.

**IREL (India) Limited****Six Monthly Compliance Report (October 2021 to March 2022)**

S.No.	Description of Conditions	Status
X	Replantation programmed in mined out areas should be submitted within six months with complete details of physical targets to be achieved with definite time frames.	Being complied. Afforestation and green belt development: The details are enclosed in Annexure-2.  During the year 2021-22, total 50,500 numbers of plantations of Casuarina trees along with Cashew trees, date palm, coconut etc. were carried out in the 22.5 ha of mined out area, plant & colony area.
xi	The project authorities should recycle the waste to the maximum extent and liquid effluent coming out of the plants should meet the stipulated standards. There should be only minimum discharge. Action plan along with the implementation schedule to reduce the waste water discharge and increased recycling should be submitted by 31.8.1991.	Being complied. The waste water generated from Mineral Separation Plant is taken to Pond No.1. After settling of slime in the pond, the water is recycled for the same plant @ ~100 m <sup>3</sup> /h. The monitoring results of liquid effluent from Pond No.1(dredge pond) & ETP discharge during the period: Oct'21 to Mar'22 are given in Annexure-2. From the monitoring data, it is seen that all the parameters were within the permissible limit. Process efficiency is being improvised by fine tuning of equipments for minimization of wastes.

xii	Adequate number of effluent quality monitoring stations must be set up in consultation with the State Pollution Control Board and the effluents monitored and should be statistically analysed and the report sent to this Ministry.	Being complied. All the liquid effluents and gaseous effluents are monitored as per the stipulations of OSPCB in the Consent Oder. The monitoring results of liquid effluent from Pond No.1(dredge pond) & ETP discharge during the period: Oct'21 to Mar'22 are given in Annexure-2.
xiii	The treated effluent confirming to the prescribed standards should be utilized for green belt development to the maximum extent possible. The plan for rouse of waste water should be included in the comprehensive EIA report.	Complied. The water from Pond No.1(dredge pond) is reused for plantation development in the mined out area and post plantation care activities.
xiv	A detailed green belt development programmed should be submitted to the Ministry by 30.8.1991. For green belt the effluent water should be used to the maximum level possible.	Complied. The waste water are collected in Pond No.1 (dredge pond) and a part of that water is reused for plantation development in the mined out area. The details of plantation and green belt development are mentioned in Annexure-2.





## **IREL (India) Limited**

### **Six Monthly Compliance Report (October 2021 to March 2022)**

xv.	A separate environmental management cell with suitable qualified people to carry out various functions should be set up under the control of 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 carry out to review of the progress of requirements of Environment Management system as per ISO 14001: 2015.
xvi	The project authority must set up a laboratory facility for collection and analysis of samples under the supervision of competent technical personnel who will directly report to the Chief Executive.	Complied. Full-fledged laboratory facilities as well as Health Physics Laboratory of Bhaba Atomic Research Centre exist at site for carrying out environmental monitoring & surveillance studies. However, for environmental sample collection and analysis is being carried out by M/s Centre for Envotech & Management Consultancy Pvt. Limited, Bhubaneswar, a MoEF&CC Authorized and NABL accredited agency. Financial provision is already made to meet the requirement.



आईआरईएल (इंडिया) लिमिटेड  
IREL (India) Limited  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Government of India Undertaking)



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

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

TS/ENVR/ /REEP/ 1489A

8<sup>th</sup> June 2022

To,  
The Additional Principal Chief Conservator of Forests,  
Government of India,  
Ministry of Environment & Forests(MoEF),  
Eastern Regional Office (Eastern Zone),  
A/3, Chandrasekharpur, 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 9<sup>th</sup> February 2011.  
ii. Our compliance report TS/ENVR/05/2333A dated 25<sup>th</sup> May 2018.

With reference to above, we are herewith enclosing the compliance report for REEP (Earlier named MOPP) operation for the period October 2021 to March 2022 for your information please.

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

With Kind Regards

Yours truly,

For IREL (India) Limited

Executive Director

P. J. K. S.  
SP. B.

उड़ीसा सैंड्स कॉम्प्लेक्स माटिखालो (डाक) छत्रपुर (गंजम), ओडिशा - 761045, भारत  
Orissa Sands Complex, Matikhalo (P.O) Chatrapur (Ganjam), Odisha-761045  
फोन/Tel.: 06811-257890-95 फैक्स/Fax : 06811-257988

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धि विनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028  
Regd. Office : Plot no:1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai-400 028



**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 9<sup>th</sup> February 2011 for REEP(Earlier named as MoPP)

Period of Compliance Report: **October'2021 to March'2022**

<b>6A. Specific Conditions</b>	<b>Compliances</b>
(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 Establish is obtained from Odisha State Pollution Control Board (OSPCB) vide letter No.27002/Ind-II-NoC-3625 dated 23.12.2008. Consent to Operate is obtained from OSPCB for REEP operation vide letter No.5456/ Ind-I-Con-6419 dated 31 <sup>st</sup> March 2014 and all the stipulated conditions are being implemented. Consent to Operate Order No.2794 has been obtained vide OSPCB letter No.2304 dated 3rd March 2018 for REEP which is having validity upto 31 <sup>st</sup> March 2023. 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.	REEP treated effluent is reused in MSP using the existing drains. 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 <sup>th</sup> 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 <sup>th</sup> December 2011).



**Six Monthly Compliance Report (October'2021 to March'2022)**

(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 Centre for Envotech & Management Consultancy Pvt.Ltd., Bhubaneswar, a NABL accredited & MoEF&CC authorized agency, at five stations (Mining area south , IREL Colony, North mining, Bada Arjipalli & Kanamana) and in plant area on regular basis. The data for the period October'2021 to March'2022 is enclosed in Annexure-2. From the monitoring data it is seen that the PM10 levels are within the norm of 100 µg/m <sup>3</sup> and PM2.5 levels are within the norm of 60 µg/m <sup>3</sup> .
(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 October'2021 to March'2022 are enclosed in Annexure-2 respectively.
(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 <sup>th</sup> 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.





**Six Monthly Compliance Report (October'2021 to March'2022)**

<p>(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 Central Ground Water Authority and the 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.</p>	<p>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 October'2021 to March'2022 is enclosed as in Annexure-2.</p> <p>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, the Central Ground Water Authority and the Regional Director, Central Ground Water Board regularly.</p> <p>Corrective measures shall be immediately taken if it is observed that the groundwater table and quality is getting affected due to the REEP operation.</p>
<p>(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.</p>	<p>The existing two numbers of bore wells of Thorium Plant are used for REEP for which NOC has been already obtained in 2016</p>
<p>(xv) Suitable rainwater harvesting measures on long term basis shall be planned and implemented in consultation with the Regional Director, Central Ground Water Board.</p>	<p>Implementation of Rain Water harvesting &amp; 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.</p>
<p>(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).</p>	<p>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 &amp; EMP Report of REEP (submitted to MoEF, New Delhi vide our letter TS/ENVR/43A/6257A dated 12<sup>th</sup> July 2010 and to MoEF, Regional Office, Bhubaneswar vide our letter No.TS/ENVR/43A/2555A dated 15<sup>th</sup> March 2010. Periodic monitoring is being carried out regularly by HPU during REEP operation and reports are regularly submitted to MoEF &amp; to the Regional Office, Bhubaneswar. The monitoring report on radiation levels during the period October'2021 to March'2022 is enclosed in Annexure-2.</p>



**Six Monthly Compliance Report (October'2021 to March'2022)**

<p>(xvii) Sewage treatment plant shall be installed for the colony.</p> <p>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.</p>	<p>Construction of STP having capacity 0.6MLD /600KLD worth value Rs 1,42,00,269(One crore Forty Two Lakhs Two Hundred Sixty Nine Only)vide work order no.12-CAP-2739 ON DATED 29.02.2020 TO M/S Essel Enviro System Pvt.Ltd) is completed. All the effluents are being monitored as per OSCPB &amp; AERB norms.</p>
<p>(xviii) Sludge from the treatment plant and settling pit should be transported in safe containment.</p>	<p>Sludge from the effluent treatment plant and settling pit are transported to RCC Trenches as per AERB recommendation.</p>
<p>(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.</p>	<p>As OSCOM is an existing unit, health survey of nearby village population is being regularly carried out and record is maintained. Regular employees &amp; Contractual Workers are subjected to initial &amp; periodic Medical Examinations as per Statutory guidelines and records maintained at Medial Department, total cases attended during 2021 are 5582. Villagers of adjoining areas are provided medical treatment facilities on regular basis through Family Health Clinic &amp; Occupational Health Centre &amp; record maintained, total cases attended during 2021 are 3231. The annual disease profile of the local village &amp; 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.</p>
<p>(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.</p>	<p>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 &amp; employee's area is enclosed herewith as Annexure-2,</p>
<p>(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.</p>	<p>Pre-placement medical examination and periodical medical examination of the workers are regularly carried out as per Mining Rules &amp; AERB Rules for the employees following schedule of health examination and record is maintained.</p>
<p>(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.</p>	<p>The report on radioactivity levels in plants growing in the area, soil invertebrate animals and local agricultural produce, carried out by Health Physic Unit, Bhava Atomic Research Center, stationed at OSCOM was submitted to MoEF &amp; CC, Central Regional Office, Bhubaneswar vide our letter No.TS/ ENVR/05G/5601A dated 6<sup>th</sup></p>



	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.	<p>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 &amp; WLW, separately for core and buffer zone considering 10 km from mine lease boundary was furnished in Annexure-23 in EIA &amp; EMP Report.</p> <p>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 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 Reedley sea turtles in every year.</p>
(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.
<b>6B. General Conditions</b>	
(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	Ambient air quality monitoring is already carried out in five permanent stations, thrice in a month,



as in the buffer zone for RSPM (Particulate matter with size less than 10 micron i.e. PM <sub>10</sub> ), NO <sub>x</sub> and SO <sub>2</sub> 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.	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 October'2021 to March'2022 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 <sub>10</sub> ), NO <sub>x</sub> and SO <sub>2</sub> 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 <sub>10</sub> ), NO <sub>x</sub> and SO <sub>2</sub> 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.
(v) Industrial wastewater shall be properly collected and treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 <sup>th</sup> May 1993 and 31 <sup>st</sup> 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, 15-17 m <sup>3</sup> /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.





**Six Monthly Compliance Report (October'2021 to March'2022)**

(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 Financial Closure: Rs.98.31 crores during the year 2007 which was revised to Rs148.49 crores on 25th August 2011.Date of final approval of the Project: 25th August 2011 Date of start of land development work: 15th 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.
(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.	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.
(xii) A copy of the clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parisad/ 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.	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.



(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.	The Regional Officer of Odisha State Pollution Control Board informed during discussion that necessary action was taken in this regard.
(xiv) The environmental statement for each financial year ending 31 <sup>st</sup> 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.	The environmental statement for each financial year ending 31 <sup>st</sup> 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.
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 <a href="http://lenvfor.nic.in">http://lenvfor.nic.in</a> and a copy of the same should be forwarded to the Regional Office of this Ministry located at Bhubaneswar.	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 <sup>th</sup> February 2011. The copies of the same advertisements were sent to the Regional Office, MoEF, Bhubaneswar vide our letter No.TS/ENVR/43A/2291A dated 18 <sup>th</sup> 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.
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.
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.



आईआरईएल (इंडिया) लिमिटेड  
IREL (India) Limited  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Government of India Undertaking)



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

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

TS/ENVR/ SWDP/ 1488A

8<sup>th</sup> June 2022

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 dtd 16-08-2018.  
ii. MoEF&CC Regional Office letter No.101-1066/EPE/753 dated 24.04.2019.

With reference to the above letter of MoEF&CC, we would like to inform that subsequent to obtaining approval of MoEF&CC-CRZ clearance dtd. 16-08-18, the contract awarding work for sea water intake-outfall has been taken-up. The construction work in CRZ area is in advanced stage.

We are herewith enclosing the compliance report for operation of Sea Water Desalination Plant (SWDP) with respect to the above referred EC letters for the period October 2021 to March 2022 for kind information please.

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

With kind regards.

Yours truly,

For IREL (India) Limited

  
11/6/2022  
Executive Director

  
R. White  
S. Chelr

उडीसा सैंड्स कॉम्प्लेक्स, माटिखालो (डाक) छत्रपुर (गंजम), ओडिशा - 761045, भारत  
Orissa Sands Complex, Matikhalo (P.O) Chatrapur (Ganjam), Odisha-761045  
फोन/Tel.: 06811-257890-95 फैक्स/Fax : 06811-257988

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धि विनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028  
Regd. Office : Plot no:1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai-400 028



**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: **October' 2021 to March'2022**

Sr. No.	Condition	Compliance
<b>PART-A</b>	<b>SPECIFIC CONDITIONS</b>	
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.	Construction of sea water intake pump house and laying of intake-outfall pipelines etc. has already started but work is not completed. While doing construction work, guidelines are followed.
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.





# IREL(India)Limited, OSCOM

## Six Monthly Compliance Report (October'2021 to March' 2022)

Sr. No.	Condition	Compliance
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.
xi.	No Permanent labour camp, machinery and material storage shall be allowed in CRZ area.	Yes, agreed upon.
xii.	There shall no ground water drawal 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 neighboring 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	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.



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

Sr. No.	Condition	Compliance
	documents submitted to MoEF&CC shall be forwarded to the concerned Regional Office of MoEF&CC.	
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, will 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 <a href="http://www.envfor.nic.in">http://www.envfor.nic.in</a> . 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.



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

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 OSPB.



आईआरईएल (इंडिया) लिमिटेड  
IREL (India) Limited  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Government of India Undertaking)

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

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



TS/ENVR/ /TDP/ 1490A

8<sup>th</sup> June 2022

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 October 2021 to March 2022 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 Kind Regards

Yours truly,  
For IREL (India) Limited

  
Executive Director

  
Principal Chief Conservator of Forests





## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

#### 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.24<sup>th</sup> Dec.2018

Period of Compliance Report: **October'2021 to March'2022**

Construction of TDP has not 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 5m3/h. Project report prepared by ICT, Mumbai.

#### **General Conditions:**

SlNo.	General Conditions	Compliance
1	<b>Statutory compliance</b>	
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 Estabilsh/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 been obtained from OSPCB.
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,	The renewal of authorizations has been obtained vide letter no



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

	2016 as amended from time to time.	IND-IV-HW-12/13527 dated 17.12.2019 and valid up to 31.3.2024 and same shall be used for TDP.
2	<b>Air quality monitoring and preservation</b>	
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 <sub>10</sub> and PM <sub>2.5</sub> in reference to Pm emission, And SO <sub>2</sub> and NO <sub>x</sub> in reference to SO <sub>2</sub> and NO <sub>x</sub> 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 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.	Air Pollution Control (APC) systems to be provided at all the dust generating points including fugitive dust from all vulnerable sources, so as to comply with the prescribed



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

		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.
<b>3.</b>	<b>Water quality monitoring and preservation</b>	
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 treatment of domestic waste water to meet the prescribed standards.	Construction of STP is completed.
vii.	Garland drains and collection pits shall be provided for each stock pile to arrest the run-off in the event of	Garland drains and collection pits are provided for each



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

	heavy rains and to check the water pollution due to surface run-off.	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.
<b>4.</b>	<b>Noise monitoring and prevention</b>	
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.
<b>5.</b>	<b>Energy Conservation measures</b>	
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.
<b>6.</b>	<b>Waste management</b>	
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 stated 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.
<b>7.</b>	<b>Green Belt and EMP</b>	
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.
ii.	The project proponent shall prepare GHG emissions	Agreed upon





## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

	inventory for the plant and shall submit a programme for reduction of the same including carbon sequestration and plantation.	
<b>8.</b>	<b>Public hearing and Human health issues</b>	
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.	Regular employees & Contractual Workers shall be done when plant shall be in operation.
<b>9.</b>	<b>Corporate Environment Responsibility</b>	
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 <sup>st</sup> 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 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.	Being complied.



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

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.



आईआरईएल (इंडिया) लिमिटेड  
IREL (India) Limited  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Government of India Undertaking)

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



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

TS/ENVR/ /TP/ 1491 A

8<sup>th</sup> June 2022

To,  
The Additional Principal Chief Conservator of Forests,  
Government of India,  
Ministry of Environment & Forests,  
Eastern Regional Office (Eastern Zone),  
A/3, Chandrasekharapur, 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 23<sup>rd</sup> November 2018.

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 October 2021 to March 2022 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 Kind Regards

Yours truly,  
For IREL (India) Limited

  
08/6/2022  
Executive Director

  
S. S. S.

उडीसा सैंण्ड्स कॉम्प्लेक्स, माटिखालो (डाक) छत्रपुर (गंजाम), ओडिशा - 761045, भारत  
Orissa Sands Complex, Matikhalo (P.O) Chatrapur (Ganjam), Odisha-761045  
फोन/Tel.: 06811-257890-95 फैक्स/Fax : 06811-257988

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धि विनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028  
Regd. Office : Plot no:1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai-400 028



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

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: **October 2021 to March 2022**

S.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.	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: October'21-March'22 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: October'21-March'22. 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 $\alpha$ & Gross $\beta$ activity levels in the treated effluent were well within AERB prescribed limits 37.0 Bq/L and 370 Bq/L respectively during the period October'21-March'22





## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

S.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 Centre for Envotech &amp; Management Consultancy Pvt.Ltd., Bhubaneswar, a NABL accredited &amp; MoEF &amp; CC authorized agency, at five stations (Mining area south &amp; north , IREL Colony, Bada Arjipalli &amp; Kanamana) and in plant area on regular basis. The data for the period: October'21-March'22 is enclosed in Annexure-2.From the monitoring data it is seen that the PM<sub>10</sub> levels are well within permissible norm of 100 µg/m<sup>3</sup> and PM<sub>2.5</sub> levels are well within permissible norm of 60 µg/m<sup>3</sup>.</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) were well within the permissible norm of 50 mg/m<sup>3</sup>. 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: October'21-March'22 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.



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

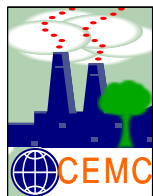
S.No.	Description of Conditions	Status
1-v	Health of occupational workers as well as population living in the proximity of the plant (5 Km) should be monitored and records maintained.	Regular employees & Contractual Workers are subjected to initial & periodic Medical Examinations as per Statutory guidelines and records maintained at Medial Department, total cases attended during 2021 are 5582. 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 2021 are 3231. The annual disease profile of the local village & employee's area is enclosed herewith as Annexure-2.
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.	The new coal fired package boiler (steam generation capacity of 18 t/h X 2 Boilers) is under operation in place of coal fired Boiler to meet the steam requirement of Thorium Section.
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.



## IREL(India)Limited, OSCOM

### Six Monthly Compliance Report (October'2021 to March' 2022)

S.No.	Description of Conditions	Status
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 carry out 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 2021-22, expenditure of Rs.1041 lakhs were made towards environmental up-gradation, pollution control and CSR activities. Financial provision for the year 2022-23 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 vides our letter No. TS/Envir/4669-A dated 26 <sup>th</sup> April 1994 to MoEF Regional Office (Eastern Zone), Bhubaneswar vide our letter No.TS/Envir/7401-A dated 24 <sup>th</sup> June 1994.
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 statement is being regularly submitted.



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/St1

Issued Date-10.05.2022

## STACK EMISSION MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Locations	Boiler , Main Dryer, Shaft Dryer- Ilemenite , Shaft Dryer- Rutile, Zircon Dryer, Garaet FBD of Garnet Plant, Monazite Upgradation Section (MUS), Zircon Dryer
Nature of Sampling	Source Emission
Sampling By	Mr.Suresh Pradhan
Instrument Used	Stack monitoring kit, Flue Gas Analyzer
Sampling Period	October' 2021 to March'2022
Parameter	Particulate Matter

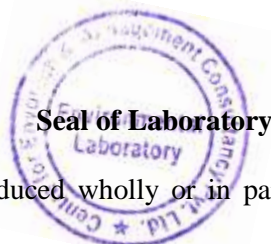
FREQUENCY								
Month	Boiler	Main Dryer	Shaft Dryer- Ilemenite	Shaft Dryer- Rutile	Zircon Dryer	Garaet FBD of Garnet Plant	Monazite Upgradation Section (MUS)	Zircon Dryer
OCT	68.8	47.8	48.8	48	49.5	49.000	46.8	49.7
NOV	71	48.7	49.2	48.5	49.9	49.400	--	49.9
DEC	84.3	50.3	49.5	48.6	49.4	49.900	48.8	49.5
JAN	87	49.85	49.5	50.3	50.1	50.000	49.3	50.95
FEB	90.75	49.95	49.75	50.05	50.4	49.950	50.1	49.1
MAR	93.2	49.95	50.25	50.2	49.95	50.500	49.95	50.85
MAXIMUM	93.2	50.3	50.25	50.3	50.4	50.500	50.1	50.95
MINIMUM	68.8	47.8	48.8	48	49.4	49.000	46.8	49.1
AVERAGE	82.50833	49.425	49.5	49.275	49.875	49.792	48.99	50
SD	10.257	0.966	0.491	1.019	0.374	0.522	1.331	0.746

OSPCB Permissible Limits- 50 mg/Nm<sup>3</sup>

Authorized Signatory

Notes:

- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

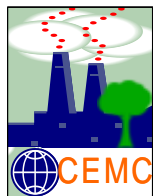


Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/St2

Issued Date-10.05.2022

## STACK EMISSION MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Locations	REEP -1 (Active Plant) Stack-1, REEP -2(RE Chloride) Stack-2
Nature of Sampling	Source Emission
Sampling By	Mr.Suresh Pradhan
Instrument Used	Stack monitoring kit, Flue Gas Analyzer
Sampling Period	October' 2021 to March'2022
Parameter	Acid Mist

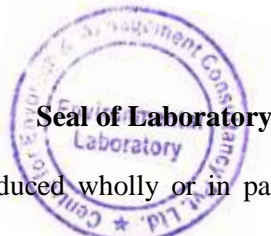
FREQUENCY	LOCATIONS	
Month	REEP -1 (Active Plant) Stack-1	REEP -2(RE Chloride) Stack-2
OCT	5.9	6.1
NOV	6.2	6.3
DEC	6.25	6.2
JAN	6.15	6.2
FEB	6.35	6.35
MAR	6.45	6.3
MAXIMUM	6.45	6.35
MINIMUM	5.9	6.1
AVERAGE	6.217	6.242
SD	0.189	0.092

OSPCB Permissible Limits- 50 mg/Nm<sup>3</sup>

Authorized Signatory

Notes:

- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

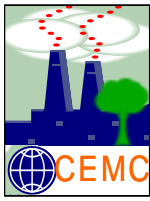


Seal of Laboratory

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/A1

Date-10.05.2022

## AMBIENT AIR QUALITY MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Nature of Sampling	Ambient Air Sample
Sampling By	Mr. Suresh Pradhan
Sampling Location	Mining Area (SMP-1)
Instrument Used	Respirable Dust Sampler, Fine Dust Sampler, Gaseous Attachment, CO Meter, Benzene Sampler
Sampling Period	October' 2021 - March' 2022

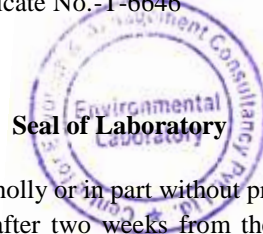
## ANALYSIS RESULT

Month	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	As	NH <sub>3</sub>	O <sub>3</sub>	Ni#	C <sub>6</sub> H <sub>6</sub>	CO	(BaP)#
OCT	8.4	11.7	58.3	30.0	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
NOV	8.7	11.9	60.9	30.6	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
DEC	10.4	13.3	68.4	37.9	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
JAN	10.4	13.6	67.7	37.6	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
FEB	10.5	13.8	68.9	39.0	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAR	10.3	14.4	70.6	38.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAXIMUM	10.5	14.4	70.6	39.0	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MINIMUM	8.4	11.7	58.3	30.0	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
AVERAGE	9.8	13.1	65.8	35.7	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
SD	1.0	1.1	5.0	4.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NAAQ STANDARD	80.0	80.0	100.0	60.0	1.0	6.0	400.0	180.0	20.0	5.0	4.0	1.0

\*All units are representing in  $\mu\text{g}/\text{m}^3$  except CO in  $\text{mg}/\text{m}^3$  and BaP, Ni, As in  $\text{ng}/\text{m}^3$

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory



Notes:

- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

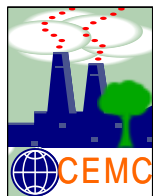
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/A2

Date-10.05.2022

## AMBIENT AIR QUALITY MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Nature of Sampling	Ambient Air Sample
Sampling By	Mr. Suresh Pradhan
Sampling Location	I.R.E.L Colony
Instrument Used	Respirable Dust Sampler, Fine Dust Sampler, Gaseous Attachment, CO Meter, Benzene Sampler
Sampling Period	October' 2021 - March' 2022

## ANALYSIS RESULT

Month	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	As	NH <sub>3</sub>	O <sub>3</sub>	Ni#	C <sub>6</sub> H <sub>6</sub>	CO	(BaP)#
OCT	8.8	11.9	61.6	31.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
NOV	9.1	12.3	62.8	32.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
DEC	10.2	13.6	67.5	37.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
JAN	10.5	14.1	67.6	37.5	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
FEB	10.6	14.1	68.0	38.4	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAR	10.4	14.9	69.7	38.2	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAXIMUM	10.6	14.9	69.7	38.4	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MINIMUM	8.8	11.9	61.6	31.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
AVERAGE	9.9	13.5	66.2	35.9	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
SD	0.8	1.2	3.2	3.2	-	-	-	-	-	-	-	-
NAAQ STANDARD	80.0	80.0	100.0	60.0	1.0	6.0	400.0	180.0	20.0	5.0	4.0	1.0

\*All units are representing in  $\mu\text{g}/\text{m}^3$  except CO in  $\text{mg}/\text{m}^3$  and BaP, Ni, As in  $\text{ng}/\text{m}^3$

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

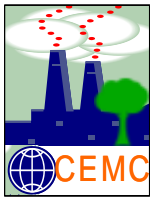
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Seal of Laboratory

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/A3

Date-10.05.2022

## AMBIENT AIR QUALITY MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Nature of Sampling	Ambient Air Sample
Sampling By	Mr. Suresh Pradhan
Sampling Location	Bada Arjipalli Port
Instrument Used	Respirable Dust Sampler, Fine Dust Sampler, Gaseous Attachment, CO Meter, Benzene Sampler
Sampling Period	October' 2021 - March' 2022

## ANALYSIS RESULT

Month	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	As	NH <sub>3</sub>	O <sub>3</sub>	Ni#	C <sub>6</sub> H <sub>6</sub>	CO	(BaP)#
OCT	8.6	12.1	61.5	31.4	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
NOV	8.9	12.3	62.1	31.7	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
DEC	10.1	13.2	66.2	36.7	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
JAN	10.6	13.7	66.5	36.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
FEB	10.5	13.6	67.6	37.5	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAR	10.2	14.4	67.7	37.0	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAXIMUM	10.6	14.4	67.7	37.5	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MINIMUM	8.6	12.1	61.5	31.4	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
AVERAGE	9.8	13.2	65.3	35.2	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
SD	0.9	0.9	2.8	2.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NAAQ STANDARD	80.0	80.0	100.0	60.0	1.0	6.0	400.0	180.0	20.0	5.0	4.0	1.0

\*All units are representing in  $\mu\text{g}/\text{m}^3$  except CO in  $\text{mg}/\text{m}^3$  and BaP, Ni, As in  $\text{ng}/\text{m}^3$

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Seal of Laboratory

Notes:

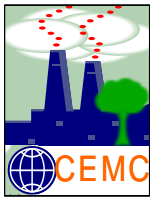
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/A4

Date-10.05.2022

## AMBIENT AIR QUALITY MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Nature of Sampling	Ambient Air Sample
Sampling By	Mr. Suresh Pradhan
Sampling Location	Kana Mana Village
Instrument Used	Respirable Dust Sampler, Fine Dust Sampler, Gaseous Attachment, CO Meter, Benzene Sampler
Sampling Period	October' 2021 - March' 2022

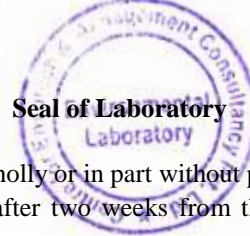
## ANALYSIS RESULT

Month	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	As	NH <sub>3</sub>	O <sub>3</sub>	Ni#	C <sub>6</sub> H <sub>6</sub>	CO	(BaP)#
OCT	9.1	12.5	62.6	32.7	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
NOV	9.3	12.8	63.2	32.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
DEC	10.3	13.1	66.7	37.1	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
JAN	10.5	13.3	66.5	36.6	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
FEB	10.4	13.5	67.4	37.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAR	10.4	14.1	68.5	37.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAXIMUM	10.5	14.1	68.5	37.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MINIMUM	9.1	12.5	62.6	32.7	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
AVERAGE	10.0	13.2	65.8	35.5	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
SD	0.6	0.6	2.4	2.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NAAQ STANDARD	80.0	80.0	100.0	60.0	1.0	6.0	400.0	180.0	20.0	5.0	4.0	1.0

\*All units are representing in  $\mu\text{g}/\text{m}^3$  except CO in  $\text{mg}/\text{m}^3$  and BaP, Ni, As in  $\text{ng}/\text{m}^3$

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory



Notes:

- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

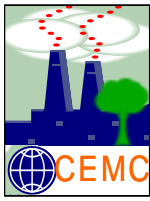
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/A5

Date-10.05.2022

## AMBIENT AIR QUALITY MONITORING TEST REPORT

Issued to	M/s.IREL(INDIA) LIMITED, Matikhala, Chatrapur, Ganjam, Odisha
Work Order No.	OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021
Nature of Sampling	Ambient Air Sample
Sampling By	Mr. Suresh Pradhan
Sampling Location	North Mining Area(SMP-3)
Instrument Used	Respirable Dust Sampler, Fine Dust Sampler, Gaseous Attachment, CO Meter, Benzene Sampler
Sampling Period	October' 2021 - March' 2022

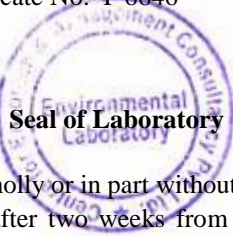
## ANALYSIS RESULT

Month	SO <sub>2</sub>	NO <sub>2</sub>	PM <sub>10</sub>	PM <sub>2.5</sub>	Lead	As	NH <sub>3</sub>	O <sub>3</sub>	Ni#	C <sub>6</sub> H <sub>6</sub>	CO	(BaP)#
OCT	8.7	11.4	61.5	31.9	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
NOV	9.0	12.1	62.1	31.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
DEC	10.5	13.5	68.3	37.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
JAN	10.2	13.8	67.4	37.3	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
FEB	10.5	13.7	68.6	38.9	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAR	10.2	14.4	70.4	38.7	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MAXIMUM	10.5	14.4	70.4	38.9	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
MINIMUM	8.7	11.4	61.5	31.8	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
AVERAGE	9.9	13.2	66.4	36.1	<0.06	<0.44	<20	<10	<15.0	<1.0	<1.0	<1.0
SD	0.8	1.1	3.7	3.3	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NAAQ STANDARD	80.0	80.0	100.0	60.0	1.0	6.0	400.0	180.0	20.0	5.0	4.0	1.0

\*All units are representing in  $\mu\text{g}/\text{m}^3$  except CO in  $\text{mg}/\text{m}^3$  and BaP, Ni, As in  $\text{ng}/\text{m}^3$

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory



Notes:

- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

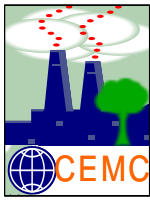
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/WW1

Date-10.05.2022

## EFFLUENT WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Treated Effluent Quality (Pond-1)

Sample Quantity

: 2.0 Ltrs

## ANALYSIS RESULT

Sl. No	Parameter	Unit	Permissible Norms by CPCB	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	5.5 to 9.0	7.74	7.68	7.93	7.99	7.54	7.54	7.54	7.54	7.737	0.191
2	Temperature	°C	--	29.10	27.40	27.8	26.5	28.6	28.6	28.6	26.50	28.000	0.957
3	Turbidity	NTU	--	12.00	10.00	14	9.2	8.9	8.9	8.9	8.90	10.500	2.077
4	Colour	Hazen	--	10.00	10.00	12	8	8	8	8	8.00	9.333	1.633
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	--	70.00	66.00	92	76	84	84	84	66.00	78.667	9.771
6	Total Dissolved Solids	mg/l	--	316.80	328.40	406.3	280.8	295.6	295.6	295.6	280.80	320.583	45.285
7	Total Suspended Solids	mg/l	100	8.40	7.20	15.1	11.5	13.1	13.1	13.1	7.20	11.400	3.037
8	Oil & Grease	mg/l	20	<1	<1	<1	<1	<1	<1	<1	<1	<1	0
9	Biochemical Oxygen Demand 3 days @ 27°C	mg/l	100	2.30	2.10	3.2	2.8	2.8	2.8	2.8	2.10	2.667	0.398
10	Chemical Oxygen Demand	mg/l	250	10.00	10.00	24	20	16	16	16	10.00	16.000	5.514
11	Dissolved Oxygen	mg/l	--	5.10	5.40	4.8	4.6	4.4	4.4	4.4	4.40	4.783	0.402
12	Chloride as Cl	mg/l	--	32.90	34.90	45.3	26.9	28.6	28.6	28.6	26.90	32.867	6.793
13	Sulphate (as SO <sub>4</sub> )	mg/l	--	12.10	12.90	16.7	8.3	8.9	8.9	8.9	8.30	11.300	3.252
14	Fluoride (as F)	mg/l	15	0.10	0.12	0.18	0.12	0.14	0.14	0.14	0.10	0.133	0.027
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	--	114.00	116.00	140	76	88	88	88	76.00	103.667	23.813
16	Calcium (as Ca)	mg/l	--	31.26	32.06	35.55	21.1	22.85	22.85	22.85	21.10	27.612	6.064
17	Magnesium (as Mg)	mg/l	--	8.75	8.75	12.64	5.83	7.53	7.53	7.53	5.83	8.505	2.292
18	Sodium (as Na)	mg/l	--	29.60	30.20	43.5	19.6	20.9	20.9	20.9	19.60	27.450	9.135
19	Potassium (as K)	mg/l	--	7.80	8.40	14.2	8.4	9.7	9.7	9.7	7.80	9.700	2.334
20	Total Nitrogen#	mg/l	--	4.20	4.40	5.3	3.4	3.9	3.9	3.9	3.40	4.183	0.643
21	Dissolved Phosphate (as P)	mg/l	--	0.21	0.24	0.33	0.21	0.26	0.26	0.26	0.21	0.252	0.044
22	Iron (as Fe)	mg/l	3	0.27	0.29	0.37	0.19	0.24	0.24	0.24	0.19	0.267	0.061

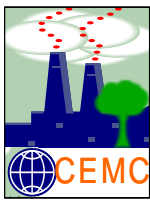
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

23	Copper (as Cu)	mg/l	3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0
24	Cadmium (as Cd)	mg/l	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
26	Zinc (as Zn)	mg/l	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium as Cr	mg/l	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
28	Hexavalent Chromium (as Cr+6)	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0
30	Total Residual Chlorine#	mg/l	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Total Kjeldhal nitrogen#	mg/l	100	1.14	1.30	1.65	1.02	1.02	8.9	1.01	1.02	2.505	3.142
32	Free Ammonia (as NH <sub>3</sub> )#	mg/l	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Arsenic (as As)	mg/l	0.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0
34	Mercury (as Hg)#	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.000
35	Selenium (as Se)#	mg/l	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.000
36	Nickel (as Ni)	mg/l	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
37	Cyanide (as CN)	mg/l	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
38	Sulphides (as S)#	mg/l	5	0.11	0.12	0.25	0.11	0.13	0.16	0.11	0.11	0.147	0.054
39	Manganese (as Mn)	mg/l	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
40	Vanadium (as V)#	mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
41	Nitrate Nitrogen as N	mg/l	20	1.29	1.34	1.75	0.82	0.91	0.89	0.81	0.82	1.167	0.360
42	Bio-assay Test#	--	90% Survival of Fish after 96 hrs in 100% Effluent	0.92	0.91	91%	91%	92%	0.14	91%	0.14	0.785	0.316
43	α- emitters*	Bq/l	3.7	0.08	0.10	0.12	0.14	0.09	0.08	0.1	0.08	0.102	0.024
44	β- emitters*	Bq/l	37	0.34	0.39	0.35	0.33	0.41	0.05	0.39	0.05	0.312	0.132

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable

\*Sample Tested By Health Physics Unit of BARC, OSCOM

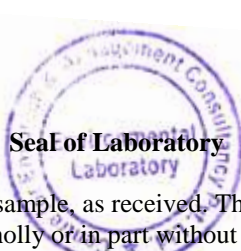
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

*M. Raut*

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Seal of Laboratory

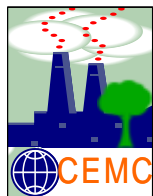
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/WW2

Date-10.05.2022

## EFFLUENT WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Treated Effluent Quality (Pond-2)

Sample Quantity

: 2.0 Ltrs

## ANALYSIS RESULT

Sl. No	Parameter	Unit	Permissible Norms by CPCB	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	5.5 to 9.0	7.61	7.53	8.02	7.43	7.36	7.36	8.02	7.36	7.552	0.250
2	Temperature	°C	--	29.20	27.20	27.40	26.80	28.90	28.9	29.20	26.80	28.067	1.046
3	Turbidity	NTU	--	14.00	11.00	15.00	10.30	9.40	9.4	15.00	9.40	11.517	2.409
4	Colour	Hazen	--	15.00	10.00	13.00	9.00	8.00	8	15.00	8.00	10.500	2.881
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	--	64.00	60.00	104.00	82.00	88.00	88	104.00	60.00	81.000	16.480
6	Total Dissolved Solids	mg/l	--	324.60	332.20	387.80	284.30	289.70	289.7	387.80	284.30	318.050	39.635
7	Total Suspended Solids	mg/l	100	11.20	8.80	14.20	12.10	13.40	13.4	14.20	8.80	12.183	1.972
8	Oil & Grease	mg/l	20	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.000
9	Biochemical Oxygen Demand 3 days @ 27°C	mg/l	100	2.50	2.30	2.80	2.60	2.40	2.4	2.80	2.30	2.500	0.179
10	Chemical Oxygen Demand	mg/l	250	15.00	10.00	22.00	20.00	16.00	16	22.00	10.00	16.500	4.183
11	Dissolved Oxygen	mg/l	--	5.00	5.20	5.20	4.80	4.60	4.6	5.20	4.60	4.900	0.276
12	Chloride as Cl	mg/l	--	34.90	36.90	43.90	27.60	28.30	28.3	43.90	27.60	33.317	6.486
13	Sulphate (as SO <sub>4</sub> )	mg/l	--	12.60	13.80	15.20	8.50	8.70	8.7	15.20	8.50	11.250	2.983
14	Fluoride (as F)	mg/l	15	0.11	0.13	0.16	0.13	0.13	0.13	0.16	0.11	0.132	0.016
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	--	118.00	120.00	128.00	80.00	84.00	84	128.00	80.00	102.333	21.851
16	Calcium (as Ca)	mg/l	--	32.06	33.66	33.13	22.62	21.64	21.64	33.66	21.64	27.458	6.048
17	Magnesium (as Mg)	mg/l	--	9.23	8.75	11.18	5.83	7.29	7.29	11.18	5.83	8.262	1.871
18	Sodium (as Na)	mg/l	--	30.20	30.80	39.10	20.40	20.70	20.7	39.10	20.40	26.983	7.668
19	Potassium (as K)	mg/l	--	9.10	9.60	12.60	8.80	9.10	9.1	12.60	8.80	9.717	1.436
20	Total Nitrogen#	mg/l	--	4.40	4.60	5.10	3.70	3.80	3.8	5.10	3.70	4.233	0.561
21	Dissolved Phosphate (as P)	mg/l	--	0.23	0.25	0.29	0.23	0.24	0.24	0.29	0.23	0.247	0.023
22	Iron (as Fe)	mg/l	3	0.28	0.31	0.34	0.21	0.22	0.22	0.34	0.21	0.263	0.055
23	Copper (as Cu)	mg/l	3	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

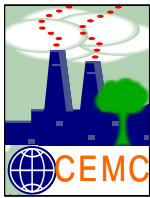
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



24	Cadmium (as Cd)	mg/l	2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	2	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	15	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium as Cr	mg/l	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C6H5OH)	mg/l	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
30	Total Residual Chlorine#	mg/l	1	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000
31	Total Kjeldhal nitrogen#	mg/l	100	1.28	1.40	1.59	1.09	1.09	1.04	1.59	1.04	1.248	0.216
32	Free Ammonia (as NH3)#	mg/l	5	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Arsenic (as As)	mg/l	0.2	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.000
34	Mercury (as Hg)#	mg/l	0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.000
35	Selenium (as Se)#	mg/l	0.05	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.000
36	Nickel (as Ni)	mg/l	5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
37	Cyanide (as CN)	mg/l	0.02	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
38	Sulphides (as S)#	mg/l	5	0.13	0.14	0.23	0.12	0.14	0.12	0.23	0.12	0.147	0.042
39	Manganese (as Mn)	mg/l	2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
40	Vanadium (as V)#	mg/l	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
41	Nitrate Nitrogen as N	mg/l	20	1.31	1.38	1.67	0.85	0.84	0.83	1.67	0.83	1.147	0.357
42	Bio-assay Test#	--	90% Survival of Fish after 96 hrs in 100% Effluent	0.91	0.92	0.93	0.93	0.91	91%	0.93	0.91	0.918	0.010
43	α- emitters*	Bq/l	3.7	--	--	--	--	--	--	--	--	--	--
44	β- emitters*	Bq/l	37	--	--	--	--	--	--	--	--	--	--

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable

\*Sample Tested By Health Physics Unit of BARC, OSCOM

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Seal of Laboratory

#### Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

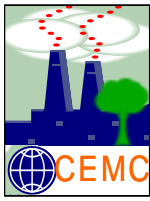
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/S1

Issued Date-10.05.2022

## SOIL QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Location

: Matikhal, Basan Putty

Sample Quantity

: 1.0 kg

### LOCATION-Matikhal

Month	PH	EC	SAR	ECE	SO4	NO3	N	P	Ca	Na	K	Fe	Org Mat
Unit	.....	µS/cm	.....	Meq/100	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
December	6.63	99.6	15.7	9.2	14.1	1.9	0.048	9.1	12.5	11.8	7.2	276.9	0.31
March	6.81	102.7	14.3	10.7	17.2	1.8	0.045	11.2	13.3	12.6	6.9	307.5	0.42
MAXIMUM	6.81	102.7	15.7	10.7	17.2	1.9	0.048	11.2	13.3	12.6	7.2	307.5	0.42
MINIMUM	6.63	99.6	14.3	9.2	14.1	1.8	0.045	9.1	12.5	11.8	6.9	276.9	0.31
AVERAGE	6.72	101.15	15	9.95	15.65	1.85	0.047	10.15	12.9	12.2	7.05	292.2	0.365
SD	0.127	2.192	0.990	1.061	2.192	0.071	0.002	1.485	0.566	0.566	0.212	21.637	0.078

### LOCATION-Basan Putty

Month	PH	EC	SAR	ECE	SO4	NO3	N	P	Ca	Na	K	Fe	Org Mat
Unit	.....	µS/cm	.....	Meq/100	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
December	6.57	102.8	16.2	9.6	15.6	2.1	0.041	9.4	13.4	12.1	7.9	280.4	0.34
March	6.72	97.6	15.7	8.9	16.8	1.6	0.035	9.9	12.7	11.8	6.7	295.8	0.37
MAXIMUM	6.72	102.8	16.2	9.6	16.8	2.1	0.041	9.9	13.4	12.1	7.9	295.8	0.37
MINIMUM	6.57	97.6	15.7	8.9	15.6	1.6	0.035	9.4	12.7	11.8	6.7	280.4	0.34
AVERAGE	6.645	100.2	15.95	9.25	16.2	1.85	0.038	9.65	13.05	11.95	7.3	288.1	0.355
SD	0.106	3.677	0.354	0.495	0.849	0.354	0.004	0.354	0.495	0.212	0.849	10.889	0.021

All Parameter Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Seal of Laboratory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

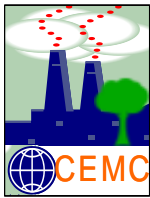
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/S2

Issued Date-10.05.2022

## SOIL QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Location

: Solid Waste Storage, Sodium Nitrate Storage

Sample Quantity

: 1.0 kg

### LOCATION-Solid Waste Storage

Month	PH	EC	SAR	ECE	SO4	NO3	N	P	Ca	Na	K	Fe	Org Mat
Unit	.....	µS/cm	.....	Meq/100	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
December	6.94	135.3	22.8	8.4	19.2	2.7	0.049	10.3	15.1	16.5	11.8	586.7	0.48
March	7.06	126.5	23.4	9.2	21.4	3.5	0.053	13.1	15.4	17.3	13.1	524.3	0.51
MAXIMUM	7.06	135.3	23.4	9.2	21.4	3.5	0.053	13.1	15.4	17.3	13.1	586.7	0.51
MINIMUM	6.94	126.5	22.8	8.4	19.2	2.7	0.049	10.3	15.1	16.5	11.8	524.3	0.48
AVERAGE	7	130.9	23.1	8.8	20.3	3.1	0.051	11.7	15.25	16.9	12.45	555.5	0.495
SD	0.085	6.223	0.424	0.566	1.556	0.566	0.002	1.980	0.212	0.566	0.919	44.123	0.021

### LOCATION-Sodium Nitrate Storage

Month	PH	EC	SAR	ECE	SO4	NO3	N	P	Ca	Na	K	Fe	Org Mat
Unit	.....	µS/cm	.....	Meq/100	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
December	7.16	169.4	27.5	10.1	25.3	3.8	0.058	11.9	18.3	21.7	16.4	813.2	0.77
March	7.19	156.8	26.1	12.4	27.1	4.1	0.057	14.7	18.6	20.9	15.3	905.6	0.69
MAXIMUM	7.19	169.4	27.5	12.4	27.1	4.1	0.058174	14.7	18.6	21.7	16.4	905.6	0.77
MINIMUM	7.16	156.8	26.1	10.1	25.3	3.8	0.057493	11.9	18.3	20.9	15.3	813.2	0.69
AVERAGE	7.175	163.1	26.8	11.25	26.2	3.95	0.057834	13.3	18.45	21.3	15.85	859.4	0.73
SD	0.021	8.910	0.990	1.626	1.273	0.212	0.000	1.980	0.212	0.566	0.778	65.337	0.057

All Parameter Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory  
Notes:

Seal of Laboratory

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

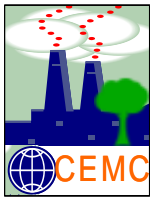
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/S3

Issued Date-10.05.2021

## SOIL QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Location

: Kanamana , BadaArjipalli

Sample Quantity

: 1.0 kg

### LOCATION-Kanamana

Month	PH	EC	SAR	ECE	SO4	NO3	N	P	Ca	Na	K	Fe	Org Mat
Unit	.....	µS/cm	.....	Meq/100	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
December	6.68	83.7	21.3	10.2	13.8	1.5	0.032	8.7	11.2	9.9	6.7	261.3	0.25
March	6.87	91.3	20.5	9.8	15.3	1.4	0.031	9.5	11.8	10.5	6.5	278.1	0.32
MAXIMUM	6.87	91.3	21.3	10.2	15.3	1.5	0.032	9.5	11.8	10.5	6.7	278.1	0.32
MINIMUM	6.68	83.7	20.5	9.8	13.8	1.4	0.031	8.7	11.2	9.9	6.5	261.3	0.25
AVERAGE	6.775	87.5	20.9	10	14.55	1.45	0.031	9.1	11.5	10.2	6.6	269.7	0.285
SD	0.134	5.374	0.566	0.283	1.061	0.071	0.001	0.566	0.424	0.424	0.141	11.879	0.049

### LOCATION-Bada Arjipalli

Month	PH	EC	SAR	ECE	SO4	NO3	N	P	Ca	Na	K	Fe	Org Mat
Unit	.....	µS/cm	.....	Meq/100	mg/kg	mg/kg	%	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	%
December	6.82	97.5	16.4	9.8	14.7	1.6	0.041	9.2	12.4	11.3	7.1	274.5	0.29
March	6.93	104.2	17.6	10.3	17.6	1.9	0.040	11.8	13.1	12.7	7.3	315.4	0.45
MAXIMUM	6.93	104.2	17.6	10.3	17.6	1.9	0.041	11.8	13.1	12.7	7.3	315.4	0.45
MINIMUM	6.82	97.5	16.4	9.8	14.7	1.6	0.040	9.2	12.4	11.3	7.1	274.5	0.29
AVERAGE	6.875	100.85	17	10.05	16.15	1.75	0.040	10.5	12.75	12	7.2	294.95	0.37
SD	0.078	4.738	0.849	0.354	2.051	0.212	0.001	1.838	0.495	0.990	0.141	28.921	0.113

All Parameter Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory

Seal of Laboratory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

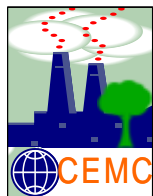
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/W1

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Location

: Hand Pump of Matikhil Village

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.21	7.18	7.58	7.63	6.71	7.24	7.63	6.71	7.258	0.332
2	Temperature	°C	29.1	28.2	28.1	27.4	28.8	29.3	29.3	27.4	28.483	0.714
3	Turbidity	NTU	5	3	3	3.4	3.2	3.2	5	3	3.467	0.766
4	Colour	Hazen	<5	<5	<5	<5	5	5	5	5	5.000	0.000
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	94	90	124	118	104	98	124	90	104.667	13.604
6	Total Dissolved Solids	mg/l	276.2	288.4	331.6	322.4	296.7	275.4	331.6	275.4	298.450	23.677
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.000
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.000
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.000
10	Chemical Oxygen Demand	mg/l	<5.0	<5.0	6	7.2	6.6	6.2	7.2	6	6.500	0.529
11	Dissolved Oxygen	mg/l	5.7	5.8	5.8	5.6	5.4	5.6	5.8	5.4	5.650	0.152
12	Chloride (as Cl)	mg/l	26.9	28.9	32.1	30.6	27.1	25.9	32.1	25.9	28.583	2.399
13	Sulphate (as SO <sub>4</sub> )	mg/l	15.8	16.4	19.9	17.1	14.5	13.2	19.9	13.2	16.150	2.305
14	Fluoride (as F)	mg/l	0.14	0.15	0.17	0.15	0.13	0.13	0.17	0.13	0.145	0.015
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	118	120.8	130	132	116	110	132	110	121.133	8.449
16	Calcium (as Ca)	mg/l	32.86	33.66	36.36	34.74	32.06	30.46	36.36	30.46	33.357	2.066
17	Magnesium (as Mg)	mg/l	8.75	8.94	9.72	11.17	8.75	8.26	11.17	8.26	9.265	1.047
18	Sodium (as Na)	mg/l	19.2	21.4	24.5	21.8	17.5	16.7	24.5	16.7	20.183	2.934

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

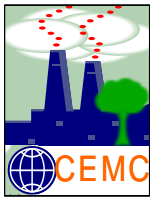
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



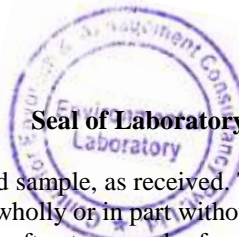
19	Potassium (as K)	mg/l	7.6	8.2	11.6	10.2	8.9	8.2	11.6	7.6	9.117	1.508
20	Total Nitrogen#	mg/l	0.82	0.9	1.49	1.23	1.12	1.09	1.49	0.82	1.108	0.240
21	Phosphorus (as PO <sub>4</sub> )	mg/l	0.05	0.08	0.09	0.08	0.07	0.07	0.09	0.05	0.073	0.014
22	Iron (as Fe)	mg/l	0.23	0.24	0.27	0.24	0.22	0.21	0.27	0.21	0.235	0.021
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	--	--	--	--	--	--	--	--	--	--

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
**Authorized Signatory**

#### Notes:

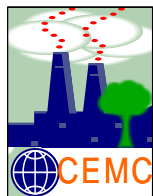
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/W2

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Location

: Railway Platform

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.52	7.46	8.34	8.47	8.23	8.31	8.47	7.46	8.055	0.445
2	Temperature	°C	29.2	28	27.5	27.1	28.9	29.9	29.9	27.1	28.433	1.076
3	Turbidity	NTU	3	2	5	6	5	4	6	2	4.167	1.472
4	Colour	Hazen	5	<5	6	7	6	6	7	5	6.000	0.707
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	136	132	208	194	156	164	208	132	165.000	30.666
6	Total Dissolved Solids	mg/l	388.4	396.6	612.8	598.2	453.2	468.7	612.8	388.4	486.317	97.529
7	Total Suspended Solids	mg/l	8.4	6.4	7.2	7.6	6.8	6.3	8.4	6.3	7.117	0.796
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.000
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	2.4	2.2	3.2	3.0	2.6	2.8	2.8	2.2	2.500	0.258
10	Chemical Oxygen Demand	mg/l	5	5	18.4	16.8	14.4	15.6	18.4	5	12.533	5.984
11	Dissolved Oxygen	mg/l	5.3	5.5	5.2	4.4	4.6	4.4	5.5	4.4	4.900	0.490
12	Chloride (as Cl)	mg/l	34.9	37.9	51.9	48.9	38.6	40.6	51.9	34.9	42.133	6.727
13	Sulphate (as SO <sub>4</sub> )	mg/l	26.1	28.3	37.6	29.3	23.1	23.9	37.6	23.1	28.050	5.260
14	Fluoride (as F)	mg/l	0.23	0.25	0.38	0.33	0.22	0.23	0.38	0.22	0.273	0.066
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	154	158	244	226	154	168	244	154	184.000	40.239
16	Calcium (as Ca)	mg/l	44.08	44.88	74.34	71.91	44.09	45.69	74.34	44.08	54.165	14.718
17	Magnesium (as Mg)	mg/l	10.69	11.18	14.58	11.66	10.69	13.12	14.58	10.69	11.987	1.558
18	Sodium (as Na)	mg/l	34.9	39.2	52.7	49.4	32.8	34.3	52.7	32.8	40.550	8.471
19	Potassium (as K)	mg/l	16.2	19.6	27.5	23.1	17.2	18.1	27.5	16.2	20.283	4.276
20	Total Nitrogen#	mg/l	7.14	7.4	13.46	11.54	9.66	9.69	13.46	7.14	9.815	2.420
21	Phosphorus (as	mg/l	0.13	0.18	0.28	0.26	0.19	0.19	0.28	0.13	0.205	0.055

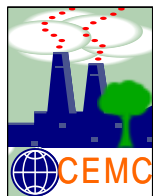
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.


An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

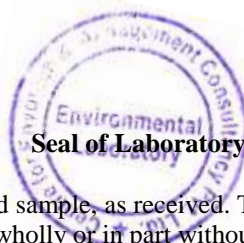
	PO4)											
22	Iron (as Fe)	mg/l	0.36	0.38	0.59	0.57	0.37	0.38	0.59	0.36	0.442	0.108
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	2.4	2.5	2.1	2.2	2.4	2.6	2.6	2.1	2.367	0.186

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
**Authorized Signatory**

**Notes:**

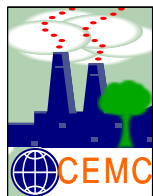
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



**Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.**

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [ccmclab@yahoo.in](mailto:ccmclab@yahoo.in), Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W3

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Location

: Composite Water from MSP

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.43	7.38	7.91	7.75	7.16	7.71	7.91	7.16	7.557	0.279
2	Temperature	°C	29	27.8	28.3	27.3	28.7	29.6	29.6	27.3	28.450	0.831
3	Turbidity	NTU	2	2	3	5	5	5	5	2	3.667	1.506
4	Colour	Hazen	<5	<5	6	7	5	6	7	5	6.000	0.816
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	108	102	156	142	128	102	156	102	123.000	22.724
6	Total Dissolved Solids	mg/l	304.6	316.2	452.4	436.8	426.3	289.2	452.4	289.2	370.917	74.989
7	Total Suspended Solids	mg/l	6.6	5.2	6.3	6.4	6.1	5.2	6.6	5.2	5.967	0.615
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.000
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	2.6	2.4	2.2	2	2.6	2	2.300	0.258
10	Chemical Oxygen Demand	mg/l	5	5	14.4	13.6	12.8	9.6	14.4	5	10.067	4.250
11	Dissolved Oxygen	mg/l	5.5	5.6	5.4	4.8	4.4	4.6	5.6	4.4	5.050	0.513
12	Chloride (as Cl)	mg/l	33.9	34.9	43.6	40.3	36.9	27.9	43.6	27.9	36.250	5.439
13	Sulphate (as SO <sub>4</sub> )	mg/l	19.4	20.2	26.7	22.5	20.7	14.6	22.5	14.6	19.480	2.956
14	Fluoride (as F)	mg/l	0.17	0.18	0.26	0.21	0.18	0.14	0.26	0.14	0.190	0.041
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	136	138	172	154	148	114	172	114	143.667	19.490
16	Calcium (as Ca)	mg/l	37.67	37.9	46.88	44.44	42.48	32.06	46.88	32.06	40.238	5.399
17	Magnesium (as Mg)	mg/l	10.21	10.5	13.61	10.69	10.21	8.26	13.61	8.26	10.580	1.724
18	Sodium (as Na)	mg/l	23.4	27.2	35.2	31.5	29.3	17.2	35.2	17.2	27.300	6.345
19	Potassium (as K)	mg/l	12.2	14.8	17.3	14.7	13.4	8.9	17.3	8.9	13.550	2.843
20	Total Nitrogen#	mg/l	2.5	2.6	8.21	7.69	6.3	1.15	8.21	1.15	4.742	3.022
21	Phosphorus (as	mg/l	0.09	0.11	0.19	0.17	0.15	0.11	0.19	0.09	0.137	0.039

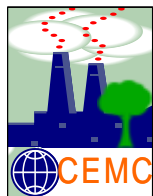
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



	PO4)											
22	Iron (as Fe)	mg/l	0.26	0.27	0.41	0.33	0.31	0.23	0.41	0.23	0.302	0.064
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	2.2	2.4	2.3	2.4	2.5	2.6	2.6	2.2	2.400	0.141

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

*M. Raut*

**Authorized Signatory**

**Notes:**

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

**Seal of Laboratory**



**Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.**

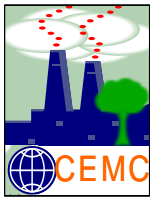
**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826**

**E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: [ccmclab@yahoo.in](mailto:ccmclab@yahoo.in), Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W4

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: October' 2021 to March' 2021

Sampling by

: Mr. Suresh Pradhan

Sample Location

: REEP up (No.1)

Sample Quantity

: 2.0 Ltrs

## ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.41	7.32	7.68	9.17	9.92	10.37	10.37	7.32	8.645	1.348
2	Temperature	°C	29	28.2	28.1	28.1	28.1	29.8	29.8	28.1	28.550	0.706
3	Turbidity	NTU	7	6	5	5	9	11	11	5	7.167	2.401
4	Colour	Hazen	<5	<5	<5	<5	10	13	13	10	11.500	2.121
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	126	120	128	128	496	406	496	120	234.000	170.505
6	Total Dissolved Solids	mg/l	336.2	336.2	352.4	352.4	1087	946.4	1087	336.2	568.433	350.136
7	Total Suspended Solids	mg/l	8.4	7.1	8.1	8.1	15.6	19.3	19.3	7.1	11.100	5.075
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	3	3.6	3.6	3	3.300	0.424
10	Chemical Oxygen Demand	mg/l	5	<5.0	10.8	10.8	24.8	26.4	26.4	5	15.560	9.483
11	Dissolved Oxygen	mg/l	5.1	4.9	4	4	4	3.6	5.1	3.6	4.267	0.592
12	Chloride (as Cl)	mg/l	15.9	13.9	21.3	21.3	73.9	92.9	92.9	13.9	39.867	34.377
13	Sulphate (as SO <sub>4</sub> )	mg/l	9.1	8.6	11.4	11.4	36.2	54.7	54.7	8.6	21.900	19.191
14	Fluoride (as F)	mg/l	0.09	0.08	0.12	0.11	0.24	0.33	0.33	0.08	0.162	0.101
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	138	132	124	124	462	412	462	124	232.000	159.665
16	Calcium (as Ca)	mg/l	33.67	34.47	32.32	32.32	152.3	137.8	152.3	32.32	70.480	57.949
17	Magnesium (as Mg)	mg/l	13.12	11.18	10.69	10.49	19.93	16.5	19.93	10.49	13.652	3.813
18	Sodium (as Na)	mg/l	17.2	18.3	17.49	17.49	68.85	61.5	68.85	17.2	33.472	24.670
19	Potassium (as K)	mg/l	5.8	6.5	8.1	7.8	37.6	31.2	37.6	5.8	16.167	14.292

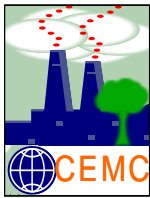
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



20	Total Nitrogen#	mg/l	3.1	3.4	3.9	3.9	15.4	13.6	15.4	3.1	7.217	5.679
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.14	<0.03	<0.03	<0.03	0.000
22	Iron (as Fe)	mg/l	0.28	0.31	0.15	0.15	0.47	0.41	0.47	0.15	0.295	0.131
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	3.2	3.3	2.6	2.7	2.7	2.6	3.3	2.6	2.850	0.315

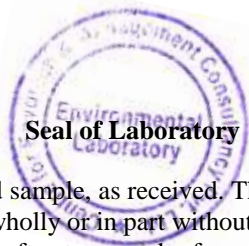
N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



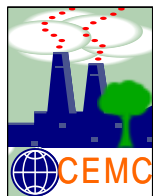
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W5

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-  
22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Location

: REEP down (No.2)

Sample Quantity

: 2.0 Ltrs

## ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	8.31	8.22	8.73	9.23	9.87	10.25	10.25	8.22	9.102	0.833
2	Temperature	°C	29.1	28.1	28.2	28.2	28.2	29.6	29.6	28.1	28.567	0.628
3	Turbidity	NTU	5	3	5	5	3	9	9	3	5.000	2.191
4	Colour	Hazen	<5	<5	<5	<5	<5	11	<5	<5	<5	0
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	322	316	182	182	204	398	398	182	267.333	90.560
6	Total Dissolved Solids	mg/l	516.4	516.4	546.8	546.8	490.2	938.6	938.6	490.2	592.533	170.886
7	Total Suspended Solids	mg/l	6.2	5.8	7.4	7.4	10.1	17.9	17.9	5.8	9.133	4.550
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	2.4	3.6	3.6	2.4	3.000	0.849
10	Chemical Oxygen Demand	mg/l	15	10	14.4	14.4	16.8	25.6	25.6	10	16.033	5.194
11	Dissolved Oxygen	mg/l	5	4.8	4.2	4.2	4.2	3.6	5	3.6	4.333	0.501
12	Chloride (as Cl)	mg/l	21.9	20.9	28.7	32.7	34.9	90.9	90.9	20.9	38.333	26.357
13	Sulphate (as SO <sub>4</sub> )	mg/l	16.4	15.9	16.5	19.5	21.3	53.1	53.1	15.9	23.783	14.517
14	Fluoride (as F)	mg/l	0.14	0.12	0.14	0.16	0.16	0.31	0.31	0.12	0.172	0.069
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	202	294	176	184	194	406	406	176	242.667	90.798
16	Calcium (as Ca)	mg/l	57.71	58.52	51.71	54.14	56.91	137.07	137.07	51.71	69.343	33.275
17	Magnesium (as Mg)	mg/l	14.09	35.96	11.66	12.15	12.64	15.55	35.96	11.66	17.008	9.393
18	Sodium (as Na)	mg/l	28.8	30.2	27.3	31.6	33.4	60.8	60.8	27.3	35.350	12.647

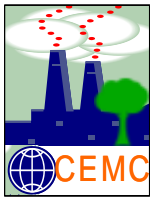
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



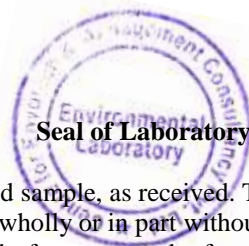
19	Potassium (as K)	mg/l	14.2	15.4	13.1	16.3	16.9	30.6	30.6	13.1	17.750	6.445
20	Total Nitrogen#	mg/l	6.6	6.8	6.9	7.4	7.8	13.5	13.5	6.6	8.167	2.649
21	Phosphorus (as PO <sub>4</sub> )	mg/l	0.1	0.12	0.08	0.08	0.07	0.12	0.12	0.07	0.095	0.022
22	Iron (as Fe)	mg/l	0.22	0.24	0.21	0.21	0.21	0.39	0.39	0.21	0.247	0.071
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	2.7	2.9	2	2.2	2.2	2.3	2.9	2	2.383	0.343

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory

#### Notes:

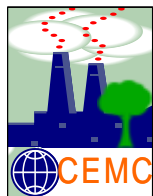
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W6

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-  
22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Location

: Upstream of Solar Evaporation Storage  
Pond

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	6.55	6.4	7.56	6.45	6.45	6.88	7.56	6.4	6.715	0.449
2	Temperature	°C	29.2	28.2	28.4	27.4	27.4	29.7	29.7	27.4	28.383	0.935
3	Turbidity	NTU	4	2	5	6	5	5	6	2	4.500	1.378
4	Colour	Hazen	<5	<5	<5	<5	<5	6	<5	<5	<5	0.000
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	152	148	144	132	138	136	152	132	141.667	7.633
6	Total Dissolved Solids	mg/l	392.8	392.6	426.5	379.2	352.8	394.6	426.5	352.8	389.750	23.950
7	Total Suspended Solids	mg/l	7.6	6.2	5.2	5.4	5.1	6.3	7.6	5.1	5.967	0.948
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	2.4	<2	<2	<2	0.000
10	Chemical Oxygen Demand	mg/l	5	5	12	11.8	10.6	12.8	12.8	5	9.533	3.581
11	Dissolved Oxygen	mg/l	4.8	4.7	4.4	4.6	4.8	4.6	4.8	4.4	4.650	0.152
12	Chloride (as Cl)	mg/l	18.9	16.9	26.9	23.9	22.3	24.9	26.9	16.9	22.300	3.774
13	Sulphate (as SO <sub>4</sub> )	mg/l	10.4	9.8	13.2	13.2	11.2	12.6	13.2	9.8	11.733	1.473
14	Fluoride (as F)	mg/l	0.12	0.1	0.13	0.13	0.11	0.11	0.13	0.1	0.117	0.012
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	146	140	142	132	120	132	146	120	135.333	9.352
16	Calcium (as Ca)	mg/l	41.68	42.48	42.02	38.78	36.07	38.48	42.48	38.78	41.240	1.672
17	Magnesium (as Mg)	mg/l	10.21	8.26	9.23	8.75	7.29	8.75	10.21	7.29	8.748	0.973
18	Sodium (as Na)	mg/l	20.4	21.6	20.7	19.5	36.07	40.3	40.3	19.5	26.428	9.229
19	Potassium (as K)	mg/l	8.8	9.4	9.2	8.1	7.6	12.4	12.4	7.6	9.250	1.685

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

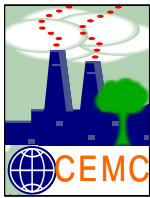
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

20	Total Nitrogen#	mg/l	6	6.2	4.8	4.6	4.1	4.9	6.2	4.1	5.100	0.825
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0
22	Iron (as Fe)	mg/l	0.24	0.26	0.18	0.18	0.16	0.18	0.26	0.16	0.200	0.040
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND		ND	ND	0.000
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND		ND	ND	0.000
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND		ND	ND	0.000
33	Depth of Water Level	Meter	2.5	2.7	1.9	2.1	2.1	2.4		1.9	2.283	0.299

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

  
Seal of Laboratory

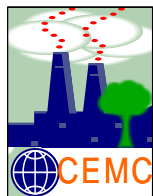
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W7

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-  
22.09.2021

Sampling Period

: October' 2021 to March' 2021

Sampling by

: Mr.Suresh Pradhan

Sample Location

: Downstream of Solar Evaporation Storage  
Pond

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Oct	Nov	Dec	Jan	Feb	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.42	7.34	9.28	8.84	8.61	5.83	9.28	5.83	7.887	1.274
2	Temperature	°C	29.1	28.1	30.5	27.9	28.4	29.7	30.5	27.9	28.950	1.011
3	Turbidity	NTU	7	5	8	11	9	11	11	5	8.500	2.345
4	Colour	Hazen	10	5	10	14	12	14	14	5	10.833	3.371
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	232	224	370	492	468	428	492	224	369.000	116.796
6	Total Dissolved Solids	mg/l	434.4	448.6	814	1286	1092	969	1286	434.4	840.667	345.670
7	Total Suspended Solids	mg/l	7.2	6.1	8.8	20.5	17.4	18.3	20.5	6.1	13.050	6.365
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.000
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	2.2	2.4	2.4	3.6	3.2	3.2	3.6	2.2	2.833	0.572
10	Chemical Oxygen Demand	mg/l	10	10	20	34.2	30.4	31.2	34.2	10	22.633	10.896
11	Dissolved Oxygen	mg/l	5	4.8	4.4	4.6	4	3.6	5	3.6	4.400	0.522
12	Chloride (as Cl)	mg/l	30.9	32.9	48.9	87.6	76.9	79.1	87.6	30.9	59.383	24.957
13	Sulphate (as SO <sub>4</sub> )	mg/l	21.6	22.2	31.2	62.8	55.6	58.3	62.8	21.6	41.950	19.016
14	Fluoride (as F)	mg/l	0.17	0.18	0.22	0.41	0.35	0.36	0.41	0.17	0.282	0.104
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	200	206	362	512	462	448	512	200	365.000	134.478
16	Calcium (as Ca)	mg/l	61.72	62.52	72.9	153.5	137.1	138.7	153.5	61.72	104.407	42.952
17	Magnesium (as Mg)	mg/l	11.18	12.15	43.74	32.08	29.16	24.79	43.74	11.18	25.517	12.435
18	Sodium (as Na)	mg/l	31.6	32.4	41.2	104.6	88.4	90.6	104.6	31.6	64.800	33.213
19	Potassium (as K)	mg/l	12.4	13.5	23.4	49.5	42.3	44.1	49.5	12.4	30.867	16.440
20	Total Nitrogen#	mg/l	8.4	8.6	12.2	28.6	23.1	23.7	28.6	8.4	17.433	8.753
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
22	Iron (as Fe)	mg/l	0.38	0.41	0.41	0.91	0.72	0.75	0.91	0.38	0.597	0.225
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000

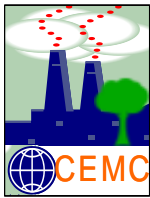
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



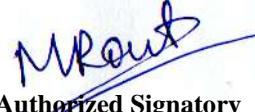
# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

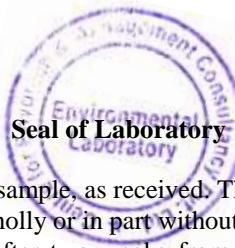
An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	2.4	2.5	2.5	2.3	2.4	2.6	2.6	2.3	2.450	0.105

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
**Authorized Signatory**  
Notes:



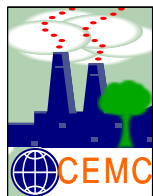
**Seal of Laboratory**

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

*Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.*

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826**  
**E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [cemclab@yahoo.in](mailto:cemclab@yahoo.in), Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W10

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-  
22.09.2021

Sampling Period

: October' 2021 to March' 2021

Sampling by

: Mr. Suresh Pradhan

Sample Location

: Odisha PHD

Sample Quantity

: 2.0 Ltrs

## ANALYSIS RESULT

Sl. No	Parameter	Unit	Apr	May	Jun	July	Aug	Sep	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.41	7.32	7.74	7.73	7.86	7.72	7.86	7.32	7.630	0.213
2	Temperature	°C	29.2	28.2	27.1	27.1	27.8	29.4	29.4	27.1	28.133	0.999
3	Turbidity	NTU	4	3	5	5	5	4	5	3	4.333	0.816
4	Colour	Hazen	<5	<5	<5	<5	<5	<5	<5	<5	<5	0.000
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	96	92	104	112	116	108	116	92	104.667	9.266
6	Total Dissolved Solids	mg/l	244	256	268	276	289	243	289	243	262.667	18.327
7	Total Suspended Solids	mg/l	<5	<5	5.1	5	5.3	5.1	5.3	5	5.125	0.126
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.000
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	<2	<2	<2	<2	0.000
10	Chemical Oxygen Demand	mg/l	5	5	5	8	10	8	10	5	6.833	2.137
11	Dissolved Oxygen	mg/l	5.5	5.6	5.2	5	5.4	5.6	5.6	5	5.383	0.240
12	Chloride (as Cl)	mg/l	7.9	8.9	10.6	11.9	12.6	11.9	12.6	7.9	10.633	1.874
13	Sulphate (as SO <sub>4</sub> )	mg/l	7.1	7.8	7.6	7.8	7.9	7.2	7.9	7.1	7.567	0.339
14	Fluoride (as F)	mg/l	0.05	0.06	0.05	0.06	0.08	0.07	0.08	0.05	0.062	0.012
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	72	74	82	88	92	90	92	72	83.000	8.462
16	Calcium (as Ca)	mg/l	20.84	21.64	24.84	25.86	27.25	26.45	27.25	20.84	24.480	2.642
17	Magnesium (as Mg)	mg/l	4.86	4.86	4.86	5.83	5.83	5.83	5.83	4.86	5.345	0.531
18	Sodium (as Na)	mg/l	8.2	9.1	9.4	10.2	10.7	9.4	10.7	8.2	9.500	0.872

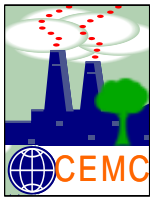
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

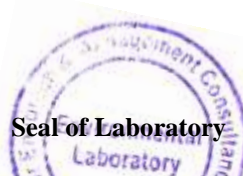
An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



19	Potassium (as K)	mg/l	2.8	3.4	3.8	3.9	4.3	4.1	4.3	2.8	3.717	0.542
20	Total Nitrogen#	mg/l	2.4	2.5	2.9	2.9	2.7	2.5	2.9	2.4	2.650	0.217
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
22	Iron (as Fe)	mg/l	0.08	0.11	0.13	0.14	0.13	0.12	0.14	0.08	0.118	0.021
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.001	<0.01	<0.01	<0.01	0.000
30	Total Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
31	Faecal Coliform	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	--	--	--	--	--	--	--	--	--	--

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

**Authorized Signatory**



## Notes:

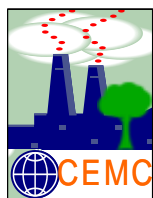
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

**Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.**

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826**  
**E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [cemclab@yahoo.in](mailto:cemclab@yahoo.in), Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W11

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-  
22.09.2021

Sampling Period

: October' 2021 to March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Location

: Lily Pond

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Apr	May	Jun	July	Aug	Sep	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.29	7.14	7.62	7.62	7.74	9.15	9.15	7.14	7.760	0.718
2	Temperature	°C	29.1	28.1	27.5	27.5	27.9	30.1	30.1	27.5	28.367	1.033
3	Turbidity	NTU	5	2	5	5	5	7	7	2	4.833	1.602
4	Colour	Hazen	15	10	8	10	7	6	15	6	9.333	3.204
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	88	84	90	96	102	94	102	84	92.333	6.377
6	Total Dissolved Solids	mg/l	162	174	210	224	232	178	232	162	196.667	29.111
7	Total Suspended Solids	mg/l	12.8	10.4	5.7	5.3	5.8	6.5	12.8	5.3	7.750	3.101
8	Oil & Grease	mg/l	<1	<1	<1	<1	<1	<1	<1	<1	<1	0.000
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	2	2.2	2.2	2.4	2.8	2.4	2.8	2	2.333	0.273
10	Chemical Oxygen Demand	mg/l	10	15	14	16	20	16	20	10	15.167	3.251
11	Dissolved Oxygen	mg/l	5.1	5	4.8	4.6	4.8	5.2	5.2	4.6	4.917	0.223
12	Chloride (as Cl)	mg/l	8.9	9.9	7.3	7.9	8.3	7.9	9.9	7.3	8.367	0.918
13	Sulphate (as SO <sub>4</sub> )	mg/l	3.8	4.3	5.9	6.2	6.5	4.8	6.5	3.8	5.250	1.104
14	Fluoride (as F)	mg/l	<0.05	<0.05	0.07	0.09	0.09	0.07	0.09	0.07	0.080	0.012
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	48	50	76	78	80	88	88	48	70.000	16.781
16	Calcium (as Ca)	mg/l	12.82	13.63	20.2	21.1	22.04	23.25	23.25	12.82	18.840	4.473
17	Magnesium (as Mg)	mg/l	3.89	3.89	6.32	6.32	6.08	7.29	7.29	3.89	5.632	1.412
18	Sodium (as Na)	mg/l	5.8	6.4	7.8	7.8	8.1	8.8	8.8	5.8	7.450	1.124
19	Potassium (as K)	mg/l	1.5	1.8	2.6	3.1	3.4	3.9	3.9	1.5	2.717	0.933

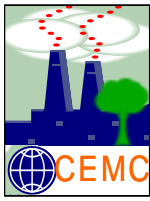
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

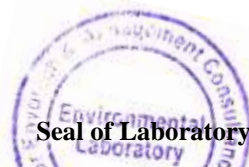
20	Total Nitrogen#	mg/l	2.1	2.3	2.4	2.2	2.3	2.5	2.5	2.1	2.300	0.141
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
22	Iron (as Fe)	mg/l	0.05	0.08	0.12	0.12	0.13	0.11	0.13	0.05	0.102	0.031
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.000
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.000
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.000
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.000
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.000
30	Total Coliform	MPN/100ml	22	26	22	17	20	22	26	17	21.500	2.950
31	Faecal Coliform	MPN/100ml	5	9	2.1	1.8	1.8	2.1	9	1.8	3.633	2.901
32	E. Coli	MPN/100ml	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
33	Depth of Water Level	Meter	--	--	--	--	--	--	--	--	--	--

N.B: ND-Not Detectable, MPN-Most Probable Number, NA- Not Applicable  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory

Notes:

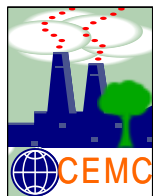
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/W12

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Kanamana Village

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	6.75	7.62	7.62	6.75	7.19	0.62
2	Temperature	°C	27.40	29.70	29.70	27.40	28.55	1.63
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	218.00	192.00	218.00	192.00	205.00	18.38
6	Total Dissolved Solids	mg/l	976.00	785.00	976.00	785.00	880.50	135.06
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	2.40	2.80	2.80	2.40	2.60	0.28
12	Chloride (as Cl)	mg/l	206.60	174.90	206.60	174.90	190.75	22.42
13	Sulphate (as SO <sub>4</sub> )	mg/l	64.40	46.20	64.40	46.20	55.30	12.87
14	Fluoride (as F)	mg/l	0.13	0.11	0.13	0.11	0.12	0.01
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	220.00	182.00	220.00	182.00	201.00	26.87
16	Calcium (as Ca)	mg/l	60.60	48.90	60.60	48.90	54.75	8.27
17	Magnesium (as Mg)	mg/l	17.01	14.60	17.01	14.60	15.81	1.70
18	Sodium (as Na)	mg/l	73.60	42.30	73.60	42.30	57.95	22.13
19	Potassium (as K)	mg/l	21.40	14.10	21.40	14.10	17.75	5.16
20	Total Nitrogen#	mg/l	1.75	1.16	1.75	1.16	1.46	0.42
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.34	0.29	0.34	0.29	0.32	0.04
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00

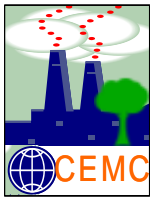
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



30	Total Coliform	MPN/100 ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100 ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100 ml	<2	<2	<2	<2	<2	0.00

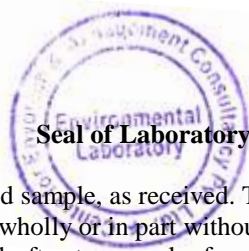
N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

**Authorized Signatory**

**Notes:**

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

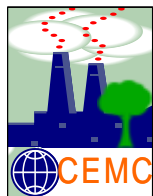


**Seal of Laboratory**

*Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.*

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826**  
**E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [cemclab@yahoo.in](mailto:cemclab@yahoo.in), Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W13

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Bada Arjipally

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.79	8.28	8.28	7.79	8.04	0.35
2	Temperature	°C	27.20	29.40	29.40	27.20	28.30	1.56
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	156.00	78.00	156.00	78.00	117.00	55.15
6	Total Dissolved Solids	mg/l	493.00	245.00	493.00	245.00	369.00	175.36
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	0.00
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	0.00
11	Dissolved Oxygen	mg/l	2.60	2.80	2.80	2.60	2.70	0.14
12	Chloride (as Cl)	mg/l	71.30	35.60	71.30	35.60	53.45	25.24
13	Sulphate (as SO <sub>4</sub> )	mg/l	22.80	12.30	22.80	12.30	17.55	7.42
14	Fluoride (as F)	mg/l	0.09	0.07	0.09	0.07	0.08	0.01
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	146.00	76.00	146.00	76.00	111.00	49.50
16	Calcium (as Ca)	mg/l	42.02	20.84	42.02	20.84	31.43	14.98
17	Magnesium (as Mg)	mg/l	10.21	5.83	10.21	5.83	8.02	3.10
18	Sodium (as Na)	mg/l	28.40	16.70	28.40	16.70	22.55	8.27
19	Potassium (as K)	mg/l	9.80	5.20	9.80	5.20	7.50	3.25
20	Total Nitrogen#	mg/l	0.81	0.61	0.81	0.61	0.71	0.14
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.21	0.12	0.21	0.12	0.17	0.06
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

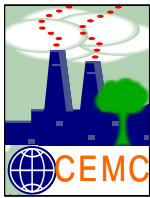
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100 ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100 ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100 ml	<2	<2	<2	<2	<2	0.00

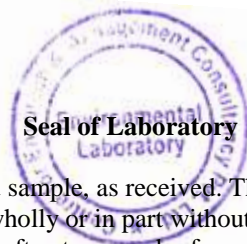
N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Seal of Laboratory

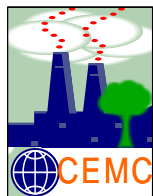
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W14

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Sana Arjipally

Sample Quantity

: 2.0 Ltrs

## ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	6.91	8.73	8.73	6.91	7.82	1.29
2	Temperature	°C	27.60	29.20	29.20	27.60	28.40	1.13
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	86.00	84.00	86.00	84.00	85.00	1.41
6	Total Dissolved Solids	mg/l	201.00	206.00	206.00	201.00	203.50	3.54
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	0.00
11	Dissolved Oxygen	mg/l	2.60	2.40	2.60	2.40	2.50	0.14
12	Chloride (as Cl)	mg/l	39.10	31.90	39.10	31.90	35.50	5.09
13	Sulphate (as SO <sub>4</sub> )	mg/l	16.40	11.20	16.40	11.20	13.80	3.68
14	Fluoride (as F)	mg/l	0.09	0.06	0.09	0.06	0.08	0.02
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	72.00	70.00	72.00	70.00	71.00	1.41
16	Calcium (as Ca)	mg/l	20.20	20.04	20.20	20.04	20.12	0.11
17	Magnesium (as Mg)	mg/l	5.35	4.86	5.35	4.86	5.11	0.35
18	Sodium (as Na)	mg/l	17.30	15.20	17.30	15.20	16.25	1.48
19	Potassium (as K)	mg/l	5.10	5.10	5.10	5.10	5.10	0.00
20	Total Nitrogen#	mg/l	0.68	0.59	0.68	0.59	0.64	0.06
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.20	0.11	0.20	0.11	0.16	0.06
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00

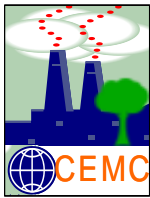
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Seal of Laboratory

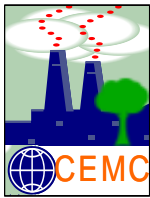
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W15

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Upallu Putty

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.52	8.05	8.05	7.52	7.79	0.37
2	Temperature	°C	27.40	28.90	28.90	27.40	28.15	1.06
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	112.00	104.00	112.00	104.00	108.00	5.66
6	Total Dissolved Solids	mg/l	578.00	502.00	578.00	502.00	540.00	53.74
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days @ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	4.00	3.60	4.00	3.60	3.80	0.28
12	Chloride (as Cl)	mg/l	116.90	104.90	116.90	104.90	110.90	8.49
13	Sulphate (as SO <sub>4</sub> )	mg/l	19.80	16.30	19.80	16.30	18.05	2.47
14	Fluoride (as F)	mg/l	0.19	0.17	0.19	0.17	0.18	0.01
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	124.00	108.00	124.00	108.00	116.00	11.31
16	Calcium (as Ca)	mg/l	36.40	32.87	36.40	32.87	34.64	2.50
17	Magnesium (as Mg)	mg/l	8.26	6.32	8.26	6.32	7.29	1.37
18	Sodium (as Na)	mg/l	37.50	32.60	37.50	32.60	35.05	3.46
19	Potassium (as K)	mg/l	12.80	11.30	12.80	11.30	12.05	1.06
20	Total Nitrogen#	mg/l	1.14	1.02	1.14	1.02	1.08	0.08
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.33	0.29	0.33	0.29	0.31	0.03
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
26	Zinc (as Zn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

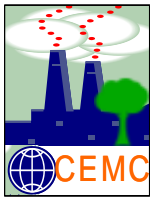
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

**Authorized Signatory**

**Seal of Laboratory**

**Notes:**

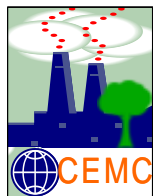
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

*Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.*

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826**  
**E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [ccmclab@yahoo.in](mailto:ccmclab@yahoo.in), Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/W16

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Bada Putty

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Dec	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.06	7.06	7.06	7.06	7.06	0.00
2	Temperature	°C	27.90	29.10	29.10	27.90	28.50	0.85
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	98.00	98.00	98.00	98.00	98.00	0.00
6	Total Dissolved Solids	mg/l	439.00	439.0	439.0	439.0	439.00	0.00
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days @ 27°C	mg/l	<2	<2	<2	<2	<2	<2
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	4.40	4.40	4.40	4.40	4.40	0.00
12	Chloride (as Cl)	mg/l	91.30	91.30	91.30	91.30	91.30	0.00
13	Sulphate (as SO <sub>4</sub> )	mg/l	13.50	13.50	13.50	13.50	13.50	0.00
14	Fluoride (as F)	mg/l	0.13	0.13	0.13	0.13	0.13	0.00
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	96.00	96.00	96.00	96.00	96.00	0.00
16	Calcium (as Ca)	mg/l	29.09	29.09	29.09	29.09	29.09	0.00
17	Magnesium (as Mg)	mg/l	5.83	5.83	5.83	5.83	5.83	0.00
18	Sodium (as Na)	mg/l	23.90	23.90	23.90	23.90	23.90	0.00
19	Potassium (as K)	mg/l	6.10	6.10	6.10	6.10	6.10	0.00
20	Total Nitrogen#	mg/l	0.82	0.82	0.82	0.82	0.82	0.00
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.24	0.24	0.24	0.24	0.24	0.00
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
26	Zinc (as Zn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

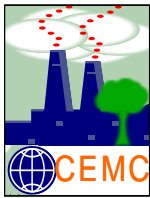
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



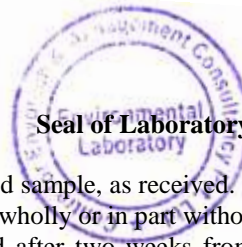
	Cr+6)							
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

**Authorized Signatory**

**Notes:**

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

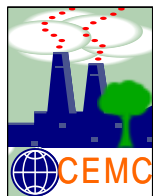


**Seal of Laboratory**

*Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.*

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [ccmclab@yahoo.in](mailto:ccmclab@yahoo.in), Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W17

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Busan Putty

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.32	8.17	8.17	7.32	7.75	0.60
2	Temperature	°C	27.50	29.30	29.30	27.50	28.40	1.27
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	124.00	102.00	124.00	102.00	113.00	15.56
6	Total Dissolved Solids	mg/l	592.00	472.00	592.00	472.00	532.00	84.85
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	4.00	4.20	4.20	4.00	4.10	0.14
12	Chloride (as Cl)	mg/l	121.60	96.80	121.60	96.80	109.20	17.54
13	Sulphate (as SO <sub>4</sub> )	mg/l	20.70	14.50	20.70	14.50	17.60	4.38
14	Fluoride (as F)	mg/l	0.21	0.15	0.21	0.15	0.18	0.04
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	132.00	102.00	132.00	102.00	117.00	21.21
16	Calcium (as Ca)	mg/l	37.17	30.46	37.17	30.46	33.82	4.74
17	Magnesium (as Mg)	mg/l	9.72	6.32	9.72	6.32	8.02	2.40
18	Sodium (as Na)	mg/l	39.40	28.50	39.40	28.50	33.95	7.71
19	Potassium (as K)	mg/l	14.30	9.80	14.30	9.80	12.05	3.18
20	Total Nitrogen#	mg/l	1.22	0.96	1.22	0.96	1.09	0.18
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.36	0.26	0.36	0.26	0.31	0.07
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
26	Zinc (as Zn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00

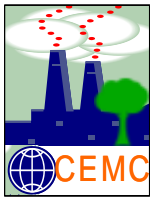
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

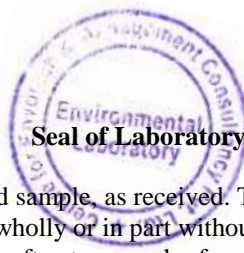
N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

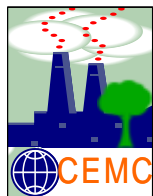
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/W18

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Takeriya Borewell

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Dec	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.52	7.84	7.84	7.52	7.68	0.23
2	Temperature	°C	29.40	29.40	29.40	29.40	29.40	0.00
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	108.00	312.00	312.00	108.00	210.00	144.25
6	Total Dissolved Solids	mg/l	286.00	992.00	992.00	286.00	639.00	499.22
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	0.00
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	4.20	4.00	4.20	4.00	4.10	0.14
12	Chloride (as Cl)	mg/l	51.60	152.90	152.90	51.60	102.25	71.63
13	Sulphate (as SO <sub>4</sub> )	mg/l	13.40	64.20	64.20	13.40	38.80	35.92
14	Fluoride (as F)	mg/l	0.09	0.31	0.31	0.09	0.20	0.16
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	92.00	284.00	284.00	92.00	188.00	135.76
16	Calcium (as Ca)	mg/l	26.26	79.36	79.36	26.26	52.81	37.55
17	Magnesium (as Mg)	mg/l	6.56	20.90	20.90	6.56	13.73	10.14
18	Sodium (as Na)	mg/l	22.70	74.20	74.20	22.70	48.45	36.42
19	Potassium (as K)	mg/l	7.90	28.50	28.50	7.90	18.20	14.57
20	Total Nitrogen#	mg/l	0.91	2.74	2.74	0.91	1.83	1.29
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.11	0.29	0.29	0.11	0.20	0.13
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

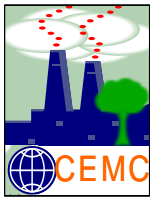
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.

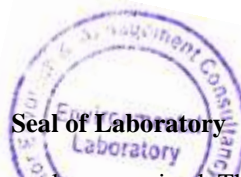


29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
**Authorized Signatory**



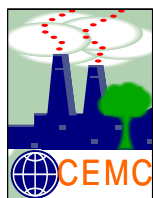
**Notes:**

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

*Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.*

**Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826**  
**E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.**

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: [cemclab@yahoo.in](mailto:cemclab@yahoo.in), Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W19

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Kandara Arjipalli

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.35	7.71	7.71	7.35	7.53	0.25
2	Temperature	°C	27.80	29.60	29.60	27.80	28.70	1.27
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	132.00	124.00	132.00	124.00	128.00	5.66
6	Total Dissolved Solids	mg/l	438.00	492.00	492.00	438.00	465.00	38.18
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	0.00
11	Dissolved Oxygen	mg/l	3.20	3.80	3.80	3.20	3.50	0.42
12	Chloride (as Cl)	mg/l	76.50	83.10	83.10	76.50	79.80	4.67
13	Sulphate (as SO <sub>4</sub> )	mg/l	27.20	32.50	32.50	27.20	29.85	3.75
14	Fluoride (as F)	mg/l	0.12	0.17	0.17	0.12	0.15	0.04
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	136.00	148.00	148.00	136.00	142.00	8.49
16	Calcium (as Ca)	mg/l	39.59	39.28	39.59	39.28	39.44	0.22
17	Magnesium (as Mg)	mg/l	9.23	12.20	12.20	9.23	10.72	2.10
18	Sodium (as Na)	mg/l	43.60	46.40	46.40	43.60	45.00	1.98
19	Potassium (as K)	mg/l	14.20	17.10	17.10	14.20	15.65	2.05
20	Total Nitrogen#	mg/l	1.60	1.37	1.60	1.37	1.49	0.16
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.16	0.18	0.18	0.16	0.17	0.01
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00

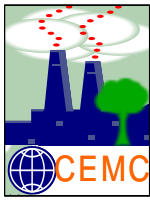
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.

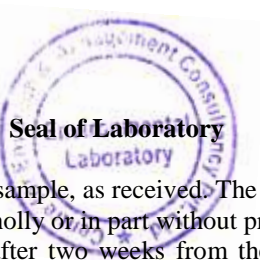


30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
**Authorized Signatory**



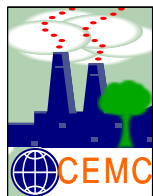
## Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W20

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Description

: SW Near Port

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.91	8.23	8.23	8.23	8.23	0.23
2	Temperature	°C	28.70	29.80	29.80	29.80	29.80	0.78
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	118.00	118.00	118.00	118.00	118.00	0.00
6	Total Dissolved Solids	mg/l	345.00	836.00	836.00	836.00	836.00	347.19
7	Total Suspended Solids	mg/l	5.20	7.90	7.90	7.90	7.90	1.91
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	<2
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	3.60	4.80	4.80	4.80	4.80	0.85
12	Chloride (as Cl)	mg/l	62.70	121.60	121.60	121.60	121.60	41.65
13	Sulphate (as SO <sub>4</sub> )	mg/l	19.30	56.10	56.10	56.10	56.10	26.02
14	Fluoride (as F)	mg/l	0.10	0.26	0.26	0.26	0.26	0.11
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	102.00	206.00	206.00	206.00	206.00	73.54
16	Calcium (as Ca)	mg/l	29.66	56.91	56.91	56.91	56.91	19.27
17	Magnesium (as Mg)	mg/l	6.95	15.61	15.61	15.61	15.61	6.12
18	Sodium (as Na)	mg/l	38.10	63.50	63.50	63.50	63.50	17.96
19	Potassium (as K)	mg/l	12.40	23.80	23.80	23.80	23.80	8.06
20	Total Nitrogen#	mg/l	1.20	2.29	2.29	2.29	2.29	0.77
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
22	Iron (as Fe)	mg/l	0.13	0.23	0.23	0.23	0.23	0.07
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	0.01	<0.02	1.01	<0.03	0.00
25	Lead (as Pb)	mg/l	<0.01	0.01	0.01	0.01	0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	0.05	0.05	0.05	0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

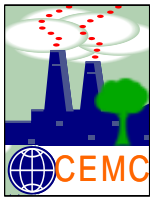
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

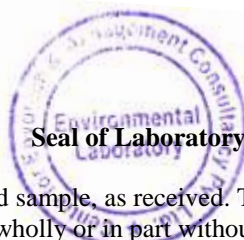
N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

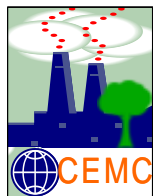
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W21

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Kalibali Village

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Dec	Mar	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.28	8.11	8.11	7.28	7.70	0.59
2	Temperature	°C	27.60	29.80	29.80	27.60	28.70	1.56
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	66.00	94.00	94.00	66.00	80.00	19.80
6	Total Dissolved Solids	mg/l	212.00	367.00	367.00	212.00	289.5	109.60
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	4.60	4.40	4.60	4.40	4.50	0.14
12	Chloride (as Cl)	mg/l	21.50	29.60	29.60	21.50	25.55	5.73
13	Sulphate (as SO <sub>4</sub> )	mg/l	8.70	13.40	13.40	8.70	11.05	3.32
14	Fluoride (as F)	mg/l	0.07	0.09	0.09	0.07	0.08	0.01
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	64.00	92.00	92.00	64.00	78.00	19.80
16	Calcium (as Ca)	mg/l	20.20	24.01	24.01	20.20	22.11	2.69
17	Magnesium (as Mg)	mg/l	5.83	7.78	7.78	5.83	6.81	1.38
18	Sodium (as Na)	mg/l	21.40	29.60	29.60	21.40	25.50	5.80
19	Potassium (as K)	mg/l	7.80	15.40	15.40	7.80	11.60	5.37
20	Total Nitrogen#	mg/l	0.70	1.30	1.30	0.70	1.00	0.42
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.18	0.21	0.21	0.18	0.20	0.02
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
26	Zinc (as Zn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00

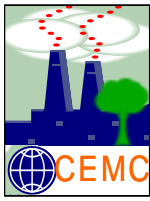
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
**Authorized Signatory**



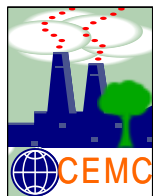
**Notes:**

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W22

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Description

: Haripur

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Decemb er	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.50	8.36	8.36	7.50	7.93	0.61
2	Temperature	°C	27.90	29.90	29.90	27.90	28.90	1.41
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	92.00	92.00	92.00	92.00	92.00	0.00
6	Total Dissolved Solids	mg/l	309.00	373.00	373.00	309.00	341.00	45.25
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	ND	ND	ND	ND	ND	ND
11	Dissolved Oxygen	mg/l	4.40	4.20	4.40	4.20	4.30	0.14
12	Chloride (as Cl)	mg/l	27.60	29.90	29.90	27.60	28.75	1.63
13	Sulphate (as SO <sub>4</sub> )	mg/l	10.40	13.80	13.80	10.40	12.10	2.40
14	Fluoride (as F)	mg/l	0.07	0.11	0.11	0.07	0.09	0.03
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	76.00	98.00	98.00	76.00	87.00	15.56
16	Calcium (as Ca)	mg/l	20.20	26.05	26.05	20.20	23.13	4.14
17	Magnesium (as Mg)	mg/l	6.32	8.02	8.02	6.32	7.17	1.20
18	Sodium (as Na)	mg/l	26.80	31.60	31.60	26.80	29.20	3.39
19	Potassium (as K)	mg/l	8.40	16.30	16.30	8.40	12.35	5.59
20	Total Nitrogen#	mg/l	0.90	1.40	1.40	0.90	1.15	0.35
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.19	0.22	0.22	0.19	0.21	0.02
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.00
26	Zinc (as Zn)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00

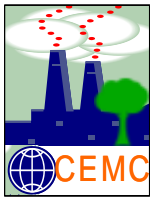
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory

#### Notes:

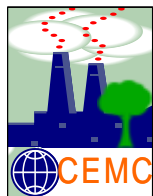
- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

  
Seal of Laboratory

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.: TC 6646

Report no. - CEMC/IREL/W23

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: Tampara Lake

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Decem ber	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.26	7.65	7.65	7.26	7.46	0.28
2	Temperature	°C	27.50	30.20	30.20	27.50	28.85	1.91
3	Turbidity	NTU	1.90	3.70	3.70	1.90	2.80	1.27
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	128.00	192.00	192.00	128.00	160.00	45.25
6	Total Dissolved Solids	mg/l	310.80	693.40	693.40	310.80	502.10	270.54
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	ND
9	Biochemical Oxygen Demand 3 days @ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	12.00	18.00	18.00	12.00	15.00	4.24
11	Dissolved Oxygen	mg/l	6.20	6.00	6.20	6.00	6.10	0.14
12	Chloride (as Cl)	mg/l	40.30	53.90	53.90	40.30	47.10	9.62
13	Sulphate (as SO <sub>4</sub> )	mg/l	15.60	24.30	24.30	15.60	19.95	6.15
14	Fluoride (as F)	mg/l	0.17	0.21	0.21	0.17	0.19	0.03
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	110.00	202.00	202.00	110.00	156.00	65.05
16	Calcium (as Ca)	mg/l	32.32	58.52	58.52	32.32	45.42	18.53
17	Magnesium (as Mg)	mg/l	7.29	13.61	13.61	7.29	10.45	4.47
18	Sodium (as Na)	mg/l	27.80	53.30	53.30	27.80	40.55	18.03
19	Potassium (as K)	mg/l	9.50	20.40	20.40	9.50	14.95	7.71
20	Total Nitrogen#	mg/l	3.70	5.10	5.10	3.70	4.40	0.99
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.22	0.34	0.34	0.22	0.28	0.08
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

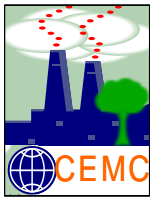
Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314





# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number

#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

  
Authorized Signatory

  
Seal of Laboratory

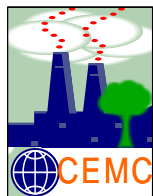
## Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001:2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Certificate No.-TC 6646

Report no. - CEMC/IREL/W24

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr.Suresh Pradhan

Sample Description

: Nolia Niuagoan

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	Decem ber	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	7.49	7.07	7.49	7.07	7.28	0.30
2	Temperature	°C	28.10	29.80	29.80	28.10	28.95	1.20
3	Turbidity	NTU	<1	<1	<1	<1	<1	0.00
4	Colour	Hazen	<5	<5	<5	<5	<5	0.00
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	136.00	168.00	168.00	136.00	152.00	22.63
6	Total Dissolved Solids	mg/l	334.20	552.60	552.60	334.20	443.40	154.43
7	Total Suspended Solids	mg/l	<5	<5	<5	<5	<5	0.00
8	Oil & Grease	mg/l	ND	ND	ND	ND	ND	0.00
9	Biochemical Oxygen Demand 3 days@ 27°C	mg/l	<2	<2	<2	<2	<2	0.00
10	Chemical Oxygen Demand	mg/l	<5	<5	<5	<5	<5	0.00
11	Dissolved Oxygen	mg/l	2.60	2.40	2.60	2.40	2.50	0.14
12	Chloride (as Cl)	mg/l	41.10	50.90	50.90	41.10	46.00	6.93
13	Sulphate (as SO <sub>4</sub> )	mg/l	16.80	21.70	21.70	16.80	19.25	3.46
14	Fluoride (as F)	mg/l	0.18	0.19	0.19	0.18	0.19	0.01
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	116.00	184.00	184.00	116.00	150.00	48.08
16	Calcium (as Ca)	mg/l	33.94	52.10	52.10	33.94	43.02	12.84
17	Magnesium (as Mg)	mg/l	7.78	13.12	13.12	7.78	10.45	3.78
18	Sodium (as Na)	mg/l	29.40	48.60	48.60	29.40	39.00	13.58
19	Potassium (as K)	mg/l	9.90	17.30	17.30	9.90	13.60	5.23
20	Total Nitrogen#	mg/l	1.30	3.60	3.60	1.30	2.45	1.63
21	Phosphorus (as PO <sub>4</sub> )	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
22	Iron (as Fe)	mg/l	0.29	0.32	0.32	0.29	0.31	0.02
23	Copper (as Cu)	mg/l	<0.03	<0.03	<0.03	<0.03	<0.03	0.00
24	Cadmium (as Cd)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
25	Lead (as Pb)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00
26	Zinc (as Zn)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
27	Total Chromium (as Cr)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.00

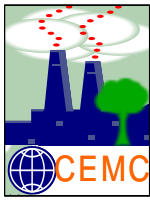
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



30	Total Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
31	Faecal Coliform	MPN/100ml	<2	<2	<2	<2	<2	0.00
32	E. Coli	MPN/100ml	<2	<2	<2	<2	<2	0.00

N.B: ND-Not Detectable, MPN-Most Probable Number  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.

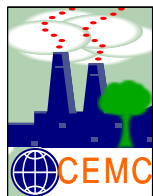


Seal of Laboratory

Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



Report no. - CEMC/IREL/W25

Date-10.05.2022

## SURFACE/GROUND WATER QUALITY MONITORING TEST REPORT

Name & Address of the Client

: M/s.IREL(INDIA) LIMITED, Matikhala,  
Chatrapur, Ganjam, Odisha

Work Order No.

: OSCOM/SOP/07/P/01753/SC-1523, Dated-22.09.2021

Sampling Period

: December' 2021 and March' 2022

Sampling by

: Mr. Suresh Pradhan

Sample Description

: IREL Sea Water

Sample Quantity

: 2.0 Ltrs

### ANALYSIS RESULT

Sl. No	Parameter	Unit	December	March	Max	Min	Avg	SD
1	pH Value @ 25°C	--	8.61	8.69	8.69	8.61	8.65	0.06
2	Temperature	°C	28.30	29.50	29.50	28.30	28.90	0.85
3	Turbidity	NTU	7.80	6.20	7.80	6.20	7.00	1.13
4	Colour	Hazen	43.00	21.00	43.00	21.00	32.00	15.56
5	Alkalinity (as CaCO <sub>3</sub> )	mg/l	994.00	962.00	994.00	962.00	978.00	22.63
6	Total Dissolved Solids	mg/l	19784.00	18931.00	19784.00	18931.00	19357.50	603.16
7	Total Suspended Solids	mg/l	19.20	13.70	19.20	13.70	16.45	3.89
8	Oil & Grease	mg/l	ND	ND	0.00	0.00	0.00	0.00
9	Biochemical Oxygen Demand 3 days @ 27°C	mg/l	5.40	4.80	5.40	4.80	5.10	0.42
10	Chemical Oxygen Demand	mg/l	64.00	72.00	72.00	64.00	68.00	5.66
11	Dissolved Oxygen	mg/l	8.00	8.20	8.20	8.00	8.10	0.14
12	Chloride (as Cl)	mg/l	7806.00	7564.00	7806	7564.00	7685	171.12
13	Sulphate (as SO <sub>4</sub> )	mg/l	304.60	386.80	386.80	304.60	345.70	58.12
14	Fluoride (as F)	mg/l	0.88	0.94	0.94	0.88	0.91	0.04
15	Total Hardness (as CaCO <sub>3</sub> )	mg/l	2192.00	2364.00	2364.00	2192.00	2278.00	121.62
16	Calcium (as Ca)	mg/l	638.32	690.98	690.98	638.32	664.65	37.24
17	Magnesium (as Mg)	mg/l	148.72	155.62	155.62	148.72	152.17	4.88
18	Sodium (as Na)	mg/l	4752.00	4924.00	4924.00	4752.00	4838.00	121.62
19	Potassium (as K)	mg/l	1619.00	1836.00	1836.00	1619.00	1727.50	153.44
20	Total Nitrogen#	mg/l	91.40	102.80	102.80	91.40	97.10	8.06
21	Phosphorus (as PO <sub>4</sub> )	mg/l	6.10	6.90	6.90	6.10	6.50	0.57
22	Iron (as Fe)	mg/l	1.53	1.81	1.81	1.53	1.67	0.20
23	Copper (as Cu)	mg/l	0.68	0.76	0.76	0.68	0.72	0.06
24	Cadmium (as Cd)	mg/l	0.06	0.05	0.06	0.05	0.06	0.01
25	Lead (as Pb)	mg/l	0.49	0.54	0.54	0.49	0.52	0.04
26	Zinc (as Zn)	mg/l	0.72	0.96	0.96	0.72	0.84	0.17
27	Total Chromium (as Cr)	mg/l	0.08	0.09	0.09	0.08	0.09	0.01
28	Hexavalent Chromium (as Cr+6)	mg/l	<0.05	<0.05	<0.05	<0.05	<0.05	0.00

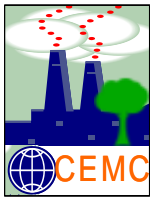
Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826

E-mail- ccmc\_consultancy@yahoo.co.in, ccmc122@gmail.com, website: www.ccmc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,

E-mail: ccmclab@yahoo.in, Mobile: 9937631956, 8895177314



# CENTRE FOR ENVOTECH AND MANAGEMENT CONSULTANCY PVT. LTD.

An ISO 9001-2008 & OHSAS 18001:2007 Certified Company, Empanelled with OCCL, ORSAC and SPCB of Govt. of Odisha  
Accredited by NABET, QCI for EIA Studies as 'A' Category Consultant Organization.  
Empanelled with PCCF(Wildlife) & CWLW, Odisha  
Enlisted in CIDC (established by the Planning Commission Govt. of India), NABL  
MoEF&CC, Govt. of India, Recognised Environment Laboratory under Environment (Protection) Act, 1986.



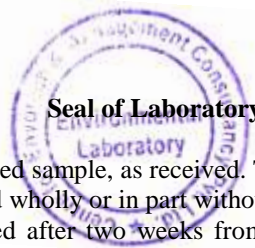
29	Phenolic Compounds (as C <sub>6</sub> H <sub>5</sub> OH )	mg/l	<0.01	0.01	0.01	0.01	0.01	0.00
30	Total Coliform	MPN/100ml	210.00	280.00	280.00	210.00	245.00	49.50
31	Faecal Coliform	MPN/100ml	22.00	33.00	33.00	22.00	27.50	7.78
32	E. Coli	MPN/100ml	1.80	3.50	3.50	1.80	2.65	1.20

N.B: ND-Not Detectable, MPN-Most Probable Number  
#- Analyzed by Eko Pro Engineers, Gaziabad, Certificate No.-T-6646

Authorized Signatory

Notes:

- The result given above related to the tested sample, as received. The customer asked for the above test only.
- This Test Report shall not be reproduced wholly or in part without prior written consent of the laboratory.
- The samples received shall be destroyed after two weeks from the date of issue of the Test Report unless specified otherwise.
- This Test Report shall not be used in any advertising media or as evidence in the court of Law without prior written consent of the laboratory.



Environmental Studies (EIA & EMP), Monitoring, Forest Diversion Planning, DPR, Wildlife Management Plan, Hazardous & Safety Studies, RS& GIS, Baseline Survey, Hydrological & Geological Studies, Socio-economic Studies, DGPS & ETS Survey.

Regd. Office: 1<sup>st</sup> Floor, N-5/305, IRC village, Nayapalli, Bhubaneswar-751015, Odisha, India, Mobile: 9861032826  
E-mail- cemc\_consultancy@yahoo.co.in, cemc122@gmail.com, website: www.cemc.in, Landline: 0674-2360344.

Laboratory At: Plot No. 800/1274, Johal, Pahal, Bhubaneswar-752101,  
E-mail: cemclab@yahoo.in, Mobile: 9937631956, 8895177314





आईआरईएल (इंडिया) लिमिटेड  
IREL (India) Limited  
(Formerly Indian Rare Earths Limited)  
(भारत सरकार का उपक्रम)  
(A Government of India Undertaking)

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

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



TS/ENVR/REPM

Date: 27.06.2022

To,

**The Additional Principal Chief Conservator of Forests (Central)**

Ministry of Environment Forest & Climate Change,

Regional Office (South Eastern Zone)

1<sup>st</sup> & 2<sup>nd</sup> Floor, HEPC Building,

No. 34, Cathedral Garden Road,

Nungambakkam, Chennai-600 034.

Dear Sir,

**Sub:** Half-yearly Compliance Report to the Stipulated Environmental Clearance conditions issued to the Setting of Rare Earth Permanent Magnet with a manufacturing capacity of 3 TPY Rare Earth Metal and 3 TPY Rare Earth Magnet at BARC Campus, Vizag by M/s IREL (India) Limited.

**Ref:** Environmental Clearance Order No. J-14011/3/2018-IA-1(N), Dt: 26.07.2019.

We are hereby submitting the **Half-yearly Compliance Report** of the stipulated Environmental Clearance conditions to the above said project for the period of October 2021 to March 2022.

With Regards.

Yours Truly,

For IREL (India) Limited,

  
29/6/2022  
Executive Director



उड़ीसा सैंड्स कॉम्प्लेक्स, माटिखालो (डाक) छत्रपुर (गंजाम), ओडिशा - 761045, भारत  
Orissa Sands Complex, Matikhalo (P.O) Chatrapur (Ganjam), Odisha-761045  
फोन/Tel.: 06811-257890-95 फैक्स/Fax : 06811-257988

पंजीकृत कार्यालय : प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धि विनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028  
Regd. Office : Plot no:1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai-400 028



# IREL (India) Limited

## Six Monthly Compliance Report (October 2021 to March 2022)

**PROJECT:** Environmental Clearance for Setting of Rare Earth Permanent Magnet Plant with a Manufacturing Capacity of 3 TPY Rare Earth Metal and 3 TPY Rare Earth Permanent Magnet at BARC Campus, Vishakhapatnam.

**EC Letter No.:** F.No.J-14011/3/2018-IA-1(N) dated 26.07.2019.

### 1 INTRODUCTION

M/s. IREL (India) Limited has proposed to setting up a plant for production of Samarium-Cobalt (SmCo) Rare Earth Permanent Magnets (REPM) with production capacity of 3 TPA Rare Earth Permanent Magnets (REPM) (product mix of  $\text{SmCo}_5$  - 1 TPA and  $\text{Sm}_2\text{Co}_{17}$  - 2 TPA) in an area of 5.0 Ac of acquired land within Bhabha Atomic Research Centre (BARC), Vizag Campus, Achutapuram, District Vishakhapatnam, State-Andhra Pradesh. Estimated cost of REPM project is Rs. 120.68 Crores.

Samarium-Cobalt (Sm-Co) Magnets are used by Department of Atomic Energy (DAE) and Defense due to their superior properties for strategic purposes. For the production facilities of the Samarium-Cobalt (SmCo) Rare Earth Permanent Magnets, a special purpose vehicle (SPV) under Department of Atomic Energy (DAE) will be formed and IREL(India)Limited will act as a management agent of the SPV to run the same.

### 2 BENEFITS

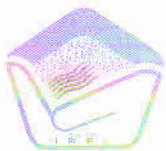
Samarium cobalt RE Permanent magnets find applications in Atomic Energy, space and Defense sectors for strategic purposes due to their superior qualities in the terms of high magnetic strength, corrosion resistance, device miniaturization capability and stability at the high temperatures. Presently our country is solely dependent on the imports settings of this project will supply the SmCo magnets in a continuous manner of various strategic projects. Product output of the project will be fully utilized by the Department of Atomic Energy/ DMRL to meet strategic need of the country.

The project is first of its kind in the country and manufacturing technology of Rare Earth Metal alloys and Permanent Magnets are developed by BARC and DMRL indigenously. REPM are essentially required by DoE for meeting strategic objectives pertaining to Atomic Energy Programme. The proposed REPM production facilities will be of strategic importance to the nation and is a "Make in India" initiative by Department of Atomic Energy (DAE). The project will be operated through SPV and IREL (India)Limited will be the management agent for the same.

### 3 OVERVIEW OF THE PROJECT

As per EIA Notification dated 14.09.2006 and its subsequent amendments, the project falls under Serial No.3 (a) Metallurgical Industry (Ferrous & Non-ferrous). Project will be setup in the acquired land and there will be no displacement of people. The water requirement for process and washing will be 24 KLD, for Chiller Plant cooling water requirement will be 120 KLD and





## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

Domestic water requirement will be 5 KLD. The waste water generated from process & washing will be 0.4 KLD, from DM plant water reject & back wash will be 1.0 KLD and from cooling tower blow down will be 1.92 KLD.

The plant will be designed as zero discharges (ZED) as far as the process effluents are concerned. The water will be re-circulated after process use, through required cooling and treatment. STP of capacity 5 KLD will be installed at the project site to treat domestic waste water. All the backwash water from DM plant, process waste water, after neutralization shall be used for toilet flushing, floor washing etc., along with STP treated waste water.

No fossil fuel will be used in the proposed facility as proposed project will be based on electric furnace/Vacuum Induction Melting Furnace. It is laboratory scale vacuum induction type batch furnace. Emission is negligible and hence no pollution control equipment envisaged. DG set of 750 KVA will be installed for backup power and HSD will be the fuel.

The solid waste generated from the process will be Calcium Hydroxide (0.75 TPA), Material Fines (0.04 TPA), Slag (0.237 TPA), Samarium Oxide (0.108 TPA) and Used Oil (0.165 LPA). No hazardous waste will be generated from the process except the Used Oil, which will be sold to registered recyclers, Calcium Hydroxide & Material Fines generated will be sold to outside agencies, Slag & Samarium Oxide generated will be reused in process and R-D route.

The rainwater harvesting pond of approx. 1500 cubic meter capacity would be considered. There would be generation of surface run-off of approx. 6725 cubic meter. It is expected that 60% of run-off (4035 cubic meters) will be collected in the pond, from the proposed plant facility. The plant runoff would be collected in the harvesting pond for use within the plant. 0.39 Ha (i.e. 33%) of area will be developed as greenbelt within the project site.

There is no forest land involved in the proposed area of 5.0 Ac for REPM project. No Wildlife Sanctuary / National Park / Mark Park located within 10 kms study area from the project site. No rare, endemic and endangered species found in the Study area. No Schedule-I species was found in the study area. No major river is within the 1 km of the project site. This REPM site is located at a distance of 4 Kms away from Bay of Bengal and thus does not require CRZ clearance.

#### **4 STATUS OF COMPLIANCE WITH ENVIRONMENTAL CLEARANCE CONDITIONS**

Vide E.C Letter F.No.J-14011/3/2018-IA-1(N) dated 26.07.2019 is described hereunder.

S.No.	Conditions	Compliance
<b>Specific Conditions</b>		
1.	The project proponent shall obtain the necessary permissions/clearances from the BARC safety council before commencement of the project.	<b>Agreed upon</b> All necessary permissions/ clearances from the BARC safety council has been obtained as stated before the commencement of project.





## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

2.	Regular monitoring of conventional radioactive pollutants in the environment shall be ensured by the BARC Council as per the AERB standards.	Since the operation does not involve handling/production of any radioactive substance, monitoring of the radioactive pollutants in the environment is not required. BSC has given consent for necessary waiver in this regard.
3.	Soil and groundwater samples shall be tested to ascertain that there is no deterioration of groundwater quality by leaching heavy metals, radio nuclides and other toxic contaminants.	In view of clarifications at Sl.No.2, all conditions under this point, except related to radio nuclides, shall be complied.  BSC has given consent for necessary waiver with respect to condition related to radio nuclides under this point. The monitoring activities have been started from Oct'2021 & data are provided in annexure-1 and are well within limit.
4.	The radioactive liquid waste emanating from the plant shall be treated and managed as per the guidelines of Atomic Energy Regulatory Board (AERB)/International Commission on Radiological Protection (ICRP) in this regard.	In view of clarifications at Sl.No.2, this condition is not applicable.  BSC has given consent for necessary waiver in this regard.
5.	The clearance from NBWL shall be ensured, if applicable.	No Forest Land falls within the proposed project area.
6.	The radioactive levels in the different matrices of environment including food chain, air, water and soil shall be monitored regularly in the surrounding areas as per AERB standards and records to be maintained.	In view of clarifications at Sl. No.2, this condition is not applicable.  BSC has given his consent for necessary waiver in this regard.
7.	The conventional pollutants shall also be monitored and records maintained	<b>Agreed upon</b> As per Environmental Monitoring Plan, The monitoring activities have been started from Oct'2021 & data are provided in annexure-1 and are well within limit.
8.	Periodic health survey of the population residing within 5 km around the proposed plant site shall be undertaken.	<b>Agreed upon</b> Periodic health survey within 5 km around the project site will be conducted and recorded.
9.	Green belt shall be developed in 33 % area around the project boundary with the native species of adequate density and width. In addition, plantation shall be	<b>Agreed upon</b> The area is net of green belt area considering the whole BARC Vizag facility. RD(Vizag) has informed that green belt adjacent to the

PW hte





# IREL (India) Limited

## Six Monthly Compliance Report (October 2021 to March 2022)

	raised in other vacant areas within the plant site	plant site will be developed which is more than 33%.
10.	A Disaster Management Plan and Emergency Preparedness Plan shall be prepared and put up 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.	<b>Agreed upon</b> As per the norms of AERB, Disaster Management Plan and Emergency Preparedness Plan will be kept in records before commencement of the project. The mock drills will be conducted and recorded under regular basis.
11.	The Risk Analysis and Probabilistic Safety Assessment reports to be verified by the competent authority in BARC Safety Council and RO, MoEF&CC.	<b>Agreed upon</b> Risk analysis already is carried out and submitted. The plant set up is of normal industrial facility (small scale plant) and first of its kind in India. This is not a nuclear facility, hence probabilistic safety assessment report to quantify risk is not required.
12.	Suitable provision shall be made for sewage/waste water disposal and storm water independently.	<b>Agreed upon</b> Sewage/ waste water disposal and storm water will be nowhere connected and disposed/ reused as committed in EIA/ EMP Report.
13	Adequate rain water harvesting system shall be put in place as committed in EIA/EMP report.	<b>Agreed upon</b> Will be implemented as committed in EIA/EMP report.
14	The ventilation air shall be released into the atmosphere after necessary control and at adequate height so that the radiation release rate as well as the increase in radiation in the surrounding area above the background levels is within the permissible limits as prescribed by the regulatory agency.	<b>Agreed upon</b> Radiation release rate as well as the increase in radiation levels will be controlled within the permissible limits by providing necessary control and adequate release height as committed in EIA/EMP report.

### General Conditions

1.	Environmental clearance is subject to obtaining all the requisite clearances from the competent authorities including Forest Clearance, if applicable and shall strictly adhere to the stipulations of the SPCB and State Government or any other statutory body.	<b>Complied</b> Consent for Establishment was obtained from Andhra Pradesh Pollution Control Board Vide Order no. 481/ APPCB/ CFE/ RO - VSP/ HO/ 2019 dated 29.10.2019. Plant will be operated after obtaining CFO.
2	Installation of STP should be certified by	<b>Complied</b>

*Handwritten signature*





## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

	concerned Pollution Control Board.	APPCB has occurred Consent for Establishment of STP.
3	It shall be ensured that the noise levels in the work zone both during construction and operation phase are within permissible limits. For people working in high noise area, requisite personal protective equipment like earplugs/ear muffs etc. shall be provided.	<b>Agreed Upon</b> The monitoring activities have been started from Oct'2021 & data are provided in annexure-1 and are well within limit.
4	Installation and operation of DG sets shall comply with notified guidelines.	<b>Agreed Upon</b> Will be strictly followed.
5	The solid wastes shall be managed and disposed as per the norms of the Solid Waste Management Rules, 2016.	<b>Agreed Upon</b> Will be complied as per the norms of the Solid Waste Management Rules, 2016 and Consent order by APPCB.
6	Any wastes from construction and demolition activities related thereto shall be managed so as to strictly conform to the Construction and Demolition Rules, 2016	<b>Agreed Upon</b> Compiled to the Construction and Demolition Rules, 2016.
7	Hazardous waste (like used oil) generated in the plant will be disposed of as per Hazardous Waste (Management, Handling & Transboundary Movement) rules, 2016.	<b>Agreed Upon</b> Will be complied as per the norms of the Hazardous Waste (Management, Handling & Transboundary Movement) rules, 2016 and Consent order by APPCB.
8	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.	<b>Agreed Upon</b> Compliance of the stipulated EC conditions will be regularly submitted to RO, MoEF along with six monthly environmental baseline study reports.
9	The project proponent shall obtain Consent to Establish/ Operate under the Air Act, 1981 and the Water Act, 1974 from the concerned State Pollution Control Board.	<b>Agreed Upon</b> Consent for Establishment was obtained from A.P Pollution Control Board Vide Order no. 481/ APPCB/ CFE/ RO - VSP/ HO/ 2019 dated 29.10.2019.
10	The project proponent shall abide by all the commitments and recommendations made in the EIA/ EMP report and also that during their presentation to the EAC.	<b>Agreed Upon</b> We will abide by all the commitments and recommendations made in the EIA/ EMP report and also that during their presentation to the EAC.
11	Install system to carryout Ambient Air	<b>Agreed Upon</b>

*Handwritten signature*



## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

	Quality monitoring for common/ criterion parameters relevant to the main pollutants released.	The monitoring activities have been started from Oct'2021 & data are provided in annexure-1 and are well within limit.
12	The project proponent shall submit six monthly compliance reports on the status of the implementation of the stipulated environmental conditions to the Regional Office, Ministry of Environment, Forest and Climate Change.	<b>Agreed Upon</b> Will be complied regularly.

12/10/21





# IREL (India) Limited

## Six Monthly Compliance Report (October 2021 to March 2022)

### ANNEXURE-1

#### AMBIENT AIR QUALITY MONITORING TEST REPORT

Name & address	M/s.IREL (India) Limited, Anuvihar, BARC Colony, Achuthapuram, Visakhapatnam
Work Order No.	R-07/O/01692 3532A OSCOM/SOP/07/O/01692 S.C.-1344, Dated-12.09.2019
Reference No.	SVELC/IREL/
Nature of Sampling	Ambient Air Sample
Sampling by	SV ENVIRO LABS & CONSULTANTS
Sampling Location	Near DM plant, Near Admin Building, Near MRSS Building.
Instrument Used	Respirable Dust Sampler, Fine Dust Sampler, Gaseous Attachment, CO Meter
Sampling Period	October 2021 to March 2022

	Location :Near DM plant		Results						
Sl	Parameters	Unit	Oct	Dec	Jan	Feb	Mar	NAAQ	Testing Method
1	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	13.1	12.3	13.6	11.9	12.7	80	IS:5182(P-2)- West and Gaeke Method
			11.2	10.5	11.0	9.9	10.1		IS:5182(P-6)- Jacob & Hochheiser Method
3	Particulate Matter (Size less	µg/m <sup>3</sup>	62.9	59.0	63.0	60.9	63.9	100	IS:5182(P-23)
4	Particulate Matter (Size less	µg/m <sup>3</sup>	27.6	25.1	27.1	26.0	28.5	60	IS:5182(P-24)
5	Carbon Monoxide (as CO)#	mg/m	0.13	0.10	0.15	0.12	0.15	4.0	IS:5182(P-10)

	Location : Near Admin Building		Results						
Sl	Parameters	Unit	Oct	Dec	Jan	Feb	Mar	NAAQ	Testing Method
1	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	12.2	11.5	12.9	10.9	11.6	80	IS:5182(P-2)- West and Gaeke Method
			9.3	8.7	9.0	8.0	9.1		IS:5182(P-6)- Jacob & Hochheiser Method
3	Particulate Matter (Size less	µg/m <sup>3</sup>	60.1	56.9	60.2	55.9	59.0	100	IS:5182(P-23)
4	Particulate Matter (Size less	µg/m <sup>3</sup>	25.4	23.1	25.1	22.8	24.5	60	IS:5182(P-24)
5	Carbon Monoxide (as CO)#	mg/m <sup>3</sup>	0.10	0.08	0.12	0.10	0.14	4.0	IS:5182(P-10)

*Handwritten signature*



## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

	Location : Near MRSS Building		Results						
Sl	Parameters	Unit	Oct	Dec	Jan	Feb	Mar	NAAQ	Testing Method
1	Sulphur Dioxide (as SO <sub>2</sub> )	µg/m <sup>3</sup>	13.9	12.3	13.5	11.2	12.7	80	IS:5182(P-2)- West and Gaeke Method
2	Nitrogen Dioxide (as NO <sub>2</sub> )	µg/m <sup>3</sup>	12.1	11.0	12.1	10.9	10.1	80	IS:5182(P-6)- Jacob & Hochheiser Method
3	Particulate Matter (Size less	µg/m <sup>3</sup>	61.8	57.4	61.2	56.0	63.9	100	IS:5182(P-23)
4	Particulate Matter (Size less	µg/m <sup>3</sup>	26.2	24.1	26.9	24.8	28.5	60	IS:5182(P-24)
5	Carbon Monoxide (as CO)#	mg/m <sup>3</sup>	0.16	0.12	0.16	0.11	0.15	4.0	IS:5182(P-10)

*Handwritten signature*





# IREL (India) Limited

## Six Monthly Compliance Report (October 2021 to March 2022) EFFLUENT WATER QUALITY MONITORING TEST REPORT

Name & address	M/s.IREL (India) Limited, Anuvihar, BARC Colony, Achuthapuram, Visakhapatnam
Work Order No.	R-07/O/01692 3532A OSCOM/SOP/07/O/01692 S.C.-1344, Dated-12.09.2019
Nature of Sampling	Ground Water Sample
Sampling by	SV ENVIRO LABS & CONSULTANTS
Sampling Period	October 2021 to March 2022

SL No.	Parameter	Unit	Results					IS 10500:2012 Specifications
			Oct'21	Dec'21	Jan'22	Feb'22	Mar'22	
1	Colour	Hazen	<1.0	<1.0	<1.0	<1.0	<1.0	5.0
2	Odour	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
3	Taste	-	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
4	Turbidity	NTU	0.11	0.10	0.12	0.14	0.16	1.0
5	pH	-	8.35	8.27	8.32	8.25	8.17	6.5-8.5
6	Total Dissolved Solids	mg/l	370	332	375	329	290	500
7	Total Alkalinity as CaCO <sub>3</sub>	mg/l	188	165	179	152	130	200
8	Total Hardness as CaCO <sub>3</sub>	mg/l	235	228	235	320	222	--
9	Calcium as Ca	mg/l	56.1	55.2	56.2	55.1	54.0	75
10	Magnesium as Mg	mg/l	23.3	22.1	23.1	22.9	21.3	30
11	Chlorides as Cl	mg/l	86.2	78.0	83.2	75.6	62.3	250
12	Fluorides as F	mg/l	0.63	0.61	0.63	0.61	0.59	1.0
13	Nitrates as NO <sub>3</sub>	mg/l	4.31	4.27	5.02	4.52	4.48	45
14	Sulphates as SO <sub>4</sub>	mg/l	40.1	37.9	40.1	37.8	34.5	200
15	Iron as Fe	mg/l	0.14	0.12	0.14	0.12	0.10	0.3
16	Free Residual Chlorine	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.2
17	Phenolic Compounds as C <sub>6</sub> H <sub>5</sub> OH	mg/l	<0.005	<0.0005	<0.0005	<0.0005	<0.0005	0.001
18	Copper as Cu	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
19	Manganese as Mn	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
20	Zinc as Zn	mg/l	0.03	0.02	0.03	0.02	<0.03	5.0
21	Aluminum as Al	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.03
22	Boron as B	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.5
23	Sulphide as H <sub>2</sub> S	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.05
24	Anionic Detergents (as MBAS)	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.2
25	Barium as Ba	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.7
26	Chloramines (as Cl <sub>2</sub> )	mg/l	<1.0	<1.0	<1.0	<1.0	<1.0	4.0
27	Ammonia as total ammonia-N	mg/l	<0.1	<0.1	<0.1	<0.1	<0.1	0.5
28	Mineral Oil	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.5
29	Selenium as Se	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
30	Silver as Ag	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.1
31	Cadmium as Cd	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.003
32	Cyanide as CN	mg/l	<0.02	<0.02	<0.02	<0.02	<0.02	0.05
33	Lead as Pb	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
34	Mercury as Hg	mg/l	<0.001	<0.001	<0.001	<0.001	<0.001	0.001
35	Molybdenum as Mo	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.07
36	Nickel as Ni	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.02
37	Total Arsenic as As	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.01
38	Total Chromium as Cr	mg/l	<0.01	<0.01	<0.01	<0.01	<0.01	0.05
39	Polychlorinated biphenyls	mg/l	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0005

*Handwritten signature*





# IREL (India) Limited

## Six Monthly Compliance Report (October 2021 to March 2022)

40	Polynuclear aromatic Hydrocarbons a PAH	mg/l	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	0.0001
<b>MICROBIOLOGY:</b>								
41	E.Coli forms	CFU/100ml	Absent	Absent	Absent	Absent	Absent	Shall not be detected in 100 ml
42	Total Coliforms	CFU/100ml	Absent	Absent	Absent	Absent	Absent	Shall not be detected in 100 ml
<b>PESTICIDES:</b>								
43	Alpha HCH	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.01
44	Beta HCH	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.04
45	Butachlor	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	125
46	Chlorpyrifos	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	30
47	Delta HCH	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.04
48	2,4-Dichlorophenoxyacetic Acid	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	30
49	DDT (o,p and p,p-Isomers of DDT, DDE and DDD)	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	1.0
50	Endosulfan (alpha, beta and Sulphate)	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.4
51	Ethion	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	3.0
52	Gamma-HCH (Lindane)	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	2.0
53	Isoproturon	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	9.0
54	Malathion	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	190
55	Methyl Parathion	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.3
56	Alachlor	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	20
57	Atrazine	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	2.0
58	Aldrin/Dieldrin	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.03
59	Monocrotophos	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	1.0
60	Phorate	µg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	2.0
<b>TRICHALOMETHANE</b>								
61	Bromoform	mg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.1
62	Dibromochloromethane	mg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.1
63	Bromodichloromethane	mg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.6
64	Chloroform	mg/l	Not Detected	Not Detected	Not Detected	Not Detected	Not Detected	0.2
<b>RADIOACTIVE MATERIALS</b>								
65	Beta Emitters	Bq/l	BDL	BDL	BDL	BDL	BDL	1.0
66	Alpha Emitters	Bq/l	BDL	BDL	BDL	BDL	BDL	0.1

BDL: Below Detectable Limit

Note: All the above parameters are tested as per APHA methods, 23<sup>rd</sup> Edition, 2017.

*Pw in Tan*



## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

NAME AND ADDRESS : M/s IREL (India) Limited,  
Anuvihar, BARC Colony,  
Mekarasi hill, Achuthapuram,  
Visakhapatnam.

SAMPLE PARTICULARS : NOISE LEVEL INTENSITY

#### TEST REPORT

SL NO.	SOURCE OF COLLECTION	NOISE LEVELS MEASURED IN dB (A)					METHOD
		OCT'21	DEC'21	JAN'22	FEB'22	MAR'22	
1	Near DM Plant (Day)	69.3	70.2	69.3	68.5	67.0	IS:4954-1968 Noise Level Meter
2	Near DM Plant (Night)	65.5	66.9	65.1	64.2	63.2	
3	Near Admin Building (Day)	65.0	66.1	65.2	64.9	63.1	
4	Near Admin Building (Night)	60.0	61.2	60.3	59.0	58.0	
5	Near MRSS Building (Day)	68.0	69.3	68.2	67.5	66.1	
6	Near MRSS Building (Night)	62.4	63.1	62.1	61.1	60.9	
7	Near Batching Plant area (Day)	63.3	64.5	63.6	62.3	61.0	
8	Near Batching Plant area (Night)	59.0	60.8	59.8	58.8	57.2	
9	Near REPM Block (Day)	62.0	63.6	62.1	61.0	60.3	
10	Near REPM Block (Night)	58.0	59.6	58.0	57.9	56.3	
STANDARDS (Day)		75.0	75.0	75.0	75.0	75.0	
STANDARDS (Night)		70.0	70.0	70.0	70.0	70.0	

**Note:** Day time shall mean from 6.00 am to 10.00 pm

Night time shall mean from 10.00 pm to 6.00 am.

P. W. K. T. C.





## IREL (India) Limited

### Six Monthly Compliance Report (October 2021 to March 2022)

NAME AND ADDRESS :

M/s IREL (India) Limited,

Anuvihar, BARC Colony,

Mekarasi hill, Achuthapuram,

Visakhapatnam.

SAMPLE PARTICULARS :

SOIL

SOURCE OF COLLECTION :

NEAR OFFICE

### TEST REPORT

SL No.	Parameter	Unit	Results				
			Oct'21	Dec'21	Jan'22	Feb'22	Mar'22
1	pH (1:2.5)	-	7.91	7.82	7.96	8.11	8.29
2	Electrical Conductivity (1:2)	µmhos	196	224	208	224	206
3	Organic carbon	%	0.0431	0.050	0.054	0.062	0.068
4	Organic matter	%	0.074	0.069	0.061	0.055	0.050
5	Phosphorus as P	Kg/ha	506.2	480	462	478	452
6	Available Nitrogen as N	Kg/ha	403	424	432	445	460
7	Exchangeable Sodium	µg/gram	61	66	59	64	69
8	Exchangeable Potassium as K	Kg/ha	242	258	236	219	230
9	Cadmium as Cd	mg/kg	<0.01	<0.01	<0.01	<0.01	<0.01
10	Chromium as Cr	mg/kg	29.2	25.1	23.9	21.6	19.1
11	Copper as Cu	mg/kg	31.1	28.6	25.1	23.8	21.9
12	Manganese as Mn	mg/kg	26.4	22.2	20.9	17.5	15.8
13	Leads as Pb	mg/kg	BDL	BDL	BDL	BDL	BDL
14	Zinc as Zn	mg/kg	98.8	91.9	88.2	82.3	90.6
15	Nickel as Ni	mg/kg	19.6	17.4	15.9	13.1	10.0
16	Uranium	mg/kg	BDL	BDL	BDL	BDL	BDL
17	Thorium	mg/kg	BDL	BDL	BDL	BDL	BDL

\*NOTE: During month of November -2021 monitoring could not carried out due to heavy rain & water logging in the area.

*P. S. S. S.*