आईआरईएल (इंडिया) लिमिटेड

IREL (INDIA) LIMITED

(Formerly Indian Rare Earths Limited)

(भारत सरकार का उपक्रम / A Govt. of India Undertaking)

चवरा, कोल्लम - 691 583, केरल राज्य, भारत

Chavara, Kollam – 691 583, Kerala State, INDIA

CIN : U15100MH1950GOI008187

फोन Phone 0476-2680701-5

फैक्स Fax 0476-2680141

इमैल Email cgm-ch@irel.co.in

वेबसाइट website www.irel.co.in

ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Company

IREL/CH/MNG/IVEE/2019
11.11.2019

Shri Sundeep,
Director, IA Division (Non Coal Mining sector),
A-106, Agni Block, I[s] floor,
MoEF & CC, New Delhi- 110003

Sub: Additional Information/ Clarification of our Mining proposal- Regarding

Ref: 1) IREL (India) Limited New proposal No: IA/KL/MIN/25461/2014; IA/KL/MIN/109526/2008; Old File No: 11-36/2008-IA-III; Old proposal No: IA/KL/MIN/85725/2008.
2) Item 2.2 of agenda for 7th EAC (Non-coal mining) meeting held on 30.07.2019
3) MOEF & CC letter F.NO.J-11015/227/2015-IA-II (M) dated 14.10.2019 for ADS.

IREL (India) Limited, Chavara (formerly Indian Rare Earths Limited), is a Government of India undertaking functioning under the Administrative control of Department of Atomic energy(DAE). Our proposal for production enhancement from 2,37,150 TPA from 7,50,000 TPA in the mine lease area for 180 ha. located at Alappad, Panmana and Ayanivelikulangara villages of Karunagappally taluk, Kollam- Distt., Kerala was considered for appraisal before the Hon'ble Chairman and EAC members vide reference (2) above. During appraisal, EAC recommended for a field visit of the project. The EAC also sought additional information and clarifications of the current proposal in the name of M/s IREL (India) Limited vide reference (3) above.

Accordingly we are submitting the requisite information/ Clarification as per the List of Annexure.

We request you to grant us Environmental & CRZ clearance at the earliest.

With kind regards,

Yours truly,
For IREL (India) Limited,

Chief General Manager & Head

Encl: Annexures

LIST OF ANNEXURES

Sl No.	Additional information / clarification	Details	Remarks
(i)	No Objection certificate (NOC) from M/s Indian Rare Earths Limited	Affidavit dated 31.10.2019 attached (in original) is attached	Annexure 1
(ii)	Lease document in name of IREL (India) Limited	Intimated Department of Industries, Government of Kerala about the change in name of the Lesse (Company). The acknowledgment receipt of intimation by Industries Department, Government of Kerala vide mail dt. 29.10.2019 is attached.	Annexure 2
(iii)	Approved Mining Plan in name of M/s IREL (India) Limited	Intimated Atomic Minerals Directorate for exploration and Research, Government of India about the change in name of the Lesse (Company). The acknowledgment receipt of intimation by AMDER, Government of India vide mail dt. 06.11.2019 is attached.	Annexure 3
(iv)	Undertaking in way of the affidavit by M/s IREL (India) Limited stating that PP shall comply with all the conditions as imposed in the EC No. 11-36/2008-IA.III dated 01.03.2011	Affidavit dated 31.10.2019 attached (in original) is attached	Annexure 4
(v)	Affidavit/ Undertaking stating that No court cases and litigation on the above Mine lease area is pending.	Affidavit dated 31.10.2019 attached (in original) is attached	Annexure 5
(vi)	Pp need to submit the details of Laboratory conducted hydrgeological study and their valid accreditation certificate.	Details of lab and accreditation attached	Annexure 6
(vii)	PP submitted that there are no migratory birds in the 180 Ha. ML area, certificate by Department of Aquatic Biology and Fisheries, University of Kerala. PP need to submit the copy of certificate.	Certificate attached	Annexure 7
(viii)	Pp need to monitor the ground water quality for radioactive parameters and submit the results of the same.	Report attached	Annexure 8
(ix)	PP should also submit application for amendment in the existing EC dated 01.03.2011 specific conditions (iii), to overcome the ambiguity arising due to recovery of minerals from waste material of dredging material carried out by IWAI , and in compliance report vide letter no. EP/12.1/2010-11/26/ Kerala.	Submitted Online-Proposal No. IA/KL/MIN/124785/ 2019 dt. 11.11.2019 for amendment in EC	Annexure 9

Subject: **Fwd: Reminder for Additional Information to PP**
To: R V Viswanath <rv.viswanath@irel.co.in>, S Jayachand <mining-ch@irel.co.in>, Sanjay Singh Lonia <ss.lonia@irel.co.in>

Date: 10/23/19 09:22 AM
From: "cgm-ch.irel" <cgm-ch@irel.co.in>

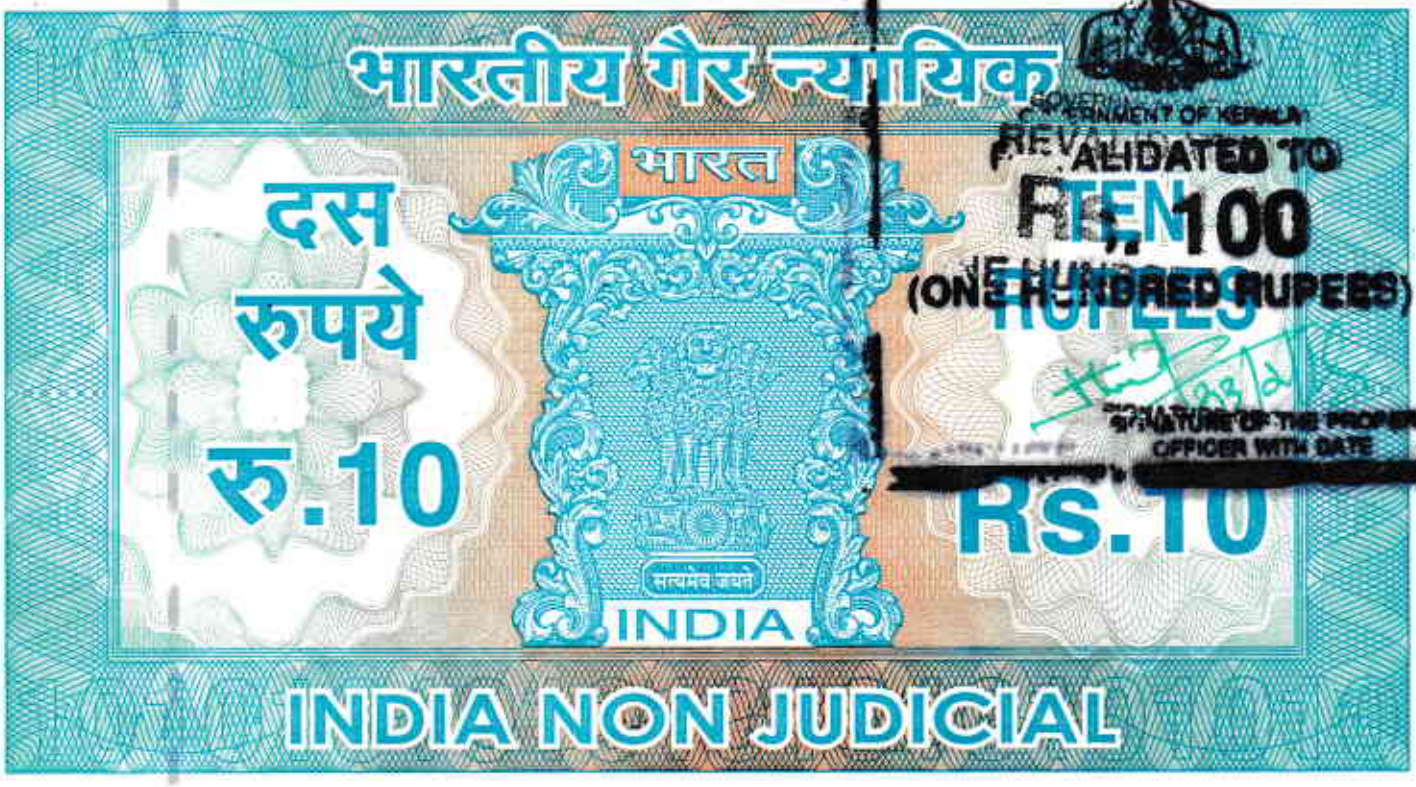
------ Original Message ------
From: sundeep.cpcb@nic.in
Date: Oct 22, 2019 5:59:24 PM
Subject: Reminder for Additional Information to PP
To: cgm-ch@irel.co.in
Cc: sundeep.cpcb@nic.in, monitoring-ec@nic.in

Email alert to proponent, if any, Additional details are sought by concerned Member Secretary

In reference to the proposal mentioned below, It is to request that the proponent shall submit the additional details as per the statement uploaded on the portal of Ministry.

1. Proposal No.	: IA/KL/MIN/109526/2008
2. File No.	: 11-36/2008-IA.III
3. Category of the Proposal	: Mining Projects
3. Name of the proposal	: Mining of heavy mineral sand in Alappad , Panmana and Ayaneivelikulangara villages in Kollam District for an area of 180 Ha in NK Block IV EE of IREL(INDIA) Limited, Chavara
4. Date of submission	: 29 Jun 2019
6. Details Sought	: ADS
7. Name of the Project proponent along with contact details	
a) Name of the proponent	: INDIAN RARE EARTHS LIMITED
b) State	: Kerala
c) District	:
d) Pincode	: 691583

Note: ***This is an automatically generated email, please do not reply***



കേരളം केरल KERALA

30AA 463686

AFFIDAVIT

Ref: (i) New proposal No. IA/KL/MIN/25461/2014 (File No. J-11015/227/2015-IA-II(M))
[Old Proposal No. IA/KL/MIN/85725/2008 (FILE NO. 11-36/2008-IA-III)]

I, S Surya Kumar S/o Shri S Sree Ramamurthy aged 56 years, Chief General Manager & Head, IREL (India) Limited, Chavara *[Formerly Indian Rare Earths Limited]*, Chavara, Kollam, Kerala state, do solemnly affirm and state as under:-

I am the Chief General Manager & Head of M/s IREL (India) Limited, Chavara *[Formerly Indian Rare Earths Limited]*, Chavara unit and I am authorized to file the following affidavit on behalf of IREL (India) Limited, Chavara Unit, Chavara.

1) The name of the Company has changed from Indian Rare Earths Limited to IREL (India) Limited with effect from 15.03.2019 and there is no change or transfer of the ownership of the company. There is no objection from Indian Rare Earths Limited for changing the name of Company in the EC No. F No. 11-36/2008-IA.III dt. 01.03.2011 issued to Indian Rare Earths Limited.

No. 379 Rs. 100/-
27.06.2018

Suryakumar.S.
CGM & Head
IREL, Chavara

एस. सूर्य कुमार S. SURYAKUMAR
मुख्य महा प्रबंधक एवं प्रमुख
CHIEF GENERAL MANAGER & HEAD
आईआरईएल (इंडिया) लिमिटेड
IREL (INDIA) LIMITED ,CHAVARA
चवरा, कोल्लम / KOLLAM - 691 583

IREL (INDIA) LIMITED चवरा CHAVARA 691 583

R.SANTHOSH KUMAR
Area : KOLLAM TALUK
Reg. No. 02/2001/KLM
Expiry Date : 23-01-2021
GOVT. OF KERALA
NOTARY

27 JUN 2018
DIST. STAMP DEPOT KOLLAM

EX OFFICIO VENDOR
DIST. STAMP DEPOT.KOLLAM

2) We shall abide by and comply with all condition and Environmental safeguards stipulated in

a) Environment and CRZ clearance no. F No. 11-36/2008-IA.III dt. 01.03.2011 above issued by MoEF&CC, New Delhi (in the name of Indian Rare Earths Limited)

b) new conditions and Environmental safeguards, if any, stipulated in the EC which will be issued by MoEF&CC, New Delhi to IREL (India) Limited for capacity expansion for Mining of Beach sand minerals in Alappad, Panmana and Ayanivelikulangara of Kollam district, Kerala.

3) I hereby undertake that no court cases and litigation is pending against us in respect of NK Block IVEE with total mine lease area of 180 Ha. located in Alappad, Panmana and Ayanivelikulangara of Kollam district, Kerala.

Dated this 30th day of October 2019

Identified by me

Advocate

ULIYAKOVIL
R. SANTHOSH KUMAR B.Com,LL.B
ADVOCATE & NOTARY
Roll No.K/423/90, KOLLAM
Mob: 9388 733 637

Deponent

एस. सूर्य कुमार S. SURYA KUMAR
मुख्य महा प्रबंधक एवं प्रधान
CHIEF GENERAL MANAGER & HEAD
आईआरईएल (इंडिया) लिमिटेड
IREL (INDIA) LIMITED ,CHAVARA
चवरा, कोल्लम KOLLAM - 691 583

SPECIAL ADHESIVE

NOTARY
R.SANTHOSH KUMAR
Area : KOLLAM TALUK
Reg. No. 02/2001/KLM
Expiry Date : 23-01-2021
GOVT. OF KERALA

HOD(Mng)/OC
6/6/2018

इंडियन रेअर अर्थ्स लिमिटेड
Indian Rare Earths Ltd.

(भारत सरकार का उपक्रम - परमाणु ऊर्जा विभाग)
(A Govt. of India Undertaking - Dept. of Atomic Energy)
प्लॉट नं. 1207, वीर सावरकर मार्ग, सिद्धि विनायक मंदिर के पास, प्रभादेवी, मुंबई - 400 028.
Plot No. 1207, Veer Savarkar Marg, Near Siddhi Vinayak Temple, Prabhadevi, Mumbai - 40 0028.
CIN : U15100MH1950GOI008187 Website : http://irel.co.in

फोन : 2438 2042
Tel. : 2421 1630
2421 1851
2422 0230
फैक्स :
Fax : 2422 0236

स्वच्छ भारत अभियान

VEXIL BPS MS Q9123051, E9122433

ISO 9001:2015 & ISO14001:2015 Company

Ref: IRE/HO/Chavara/2018

May 31, 2018

LETTER OF AUTHORISATION

Shri S. Surya Kumar, CGM & Head, Chavara is hereby authorized to sign the Mining Plan for carrying out mining activities and also for signing the Form-I for obtaining CRZ & Environmental clearances of various mining leases of IREL Chavara Mine on behalf of IREL.

This is issued with the approval of Competent authority.

T. Bhattacharya
GM (Technical)

Subject: **Fwd: Re: certificate of Incorporation pursuant to change of name- intimation regarding**
To: S Jayachand <mining-ch@irel.co.in>

Date: 10/29/19 12:10 PM
From: "cgm-ch.irel" <cgm-ch@irel.co.in>

-------- Original Message --------
From: **industries Department** <industriesadepartment@gmail.com>
Date: Oct 29, 2019 11:44:36 AM
Subject: Re: certificate of Incorporation pursuant to change of name- intimation regarding
To: "cgm-ch.irel" <cgm-ch@irel.co.in>

Received

On Mon, Oct 28, 2019 at 2:45 PM cgm-ch.irel <cgm-ch@irel.co.in> wrote:

Dear Sir,

Further to the trailing mail, we are attaching certificate of Incorporation pursuant to change of name- intimation for your kind reference.
Kindly acknowledge the receipt of letters by return mail for our record.

Regards
CGM & Head
-------- Original Message --------
From: **"cgm-ch.irel"** <cgm-ch@irel.co.in>
Date: Oct 28, 2019 1:47:25 PM
Subject: certificate of Incorporation pursuant to change of name- intimation regarding
To: industries Department <industriesadepartment@gmail.com>
Cc: Sanjay Singh Lonia <ss.lonia@irel.co.in>

Sir,

Kind Attn. Mr. Santhosh

This refers to the telecon you had with Mr. Sanjay Lonia, Manager (Mining), IREL (India) Ltd. Chavara on the subject cited above. In this connection we had sent the letters on the above mentioned subject by post on 06.08.2019. The receipt of the letters at your office is confirmed by over phone. We are attaching copy of letters for your kind reference.

Kindly acknowledge the receipt of letters by return mail for our record.

with regards,
CGM & HEAD
IREL, Chavara.

आईआरईएल (इंडिया) लिमिटेड

IREL (INDIA) LIMITED

(Formerly Indian Rare Earths Limited)

(भारत सरकार का उपक्रम / A Govt. of India Undertaking)

चवरा, कोल्लम - 691 583, केरल राज्य, भारत

Chavara, Kollam – 691 583, Kerala State, INDIA

CIN : U15100MH1950GOI008187

फोन Phone 0476-2680701-5

फेक्स Fax 0476-2680141

इमैल Email cgm-ch@irel.co in

वेबसाइट website www.irel.co.in

ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Company

CH/UHO/2019-20
25.07.2019

2070

Hon'ble Minister for Industries,
Secretriat, Government of Kerala,
Thiruvanthapuram, Kerala

Sir,

Sub: Certificate of Incorporation pursuant to change of name- intimation regarding

Ref: 1) Certificate of incorporation pursuant to change of name dated 15.03.2019, Ministry of Corporate Affairs, Government of India
2) GO (MS) No. 32/2006/ID dt. 15.03.2006- Nk Block II & IV
3) GO(MS) No. 147/98/ID dt.21.10.1998, Nk Block IIEE
4) GO(Rt.) No.746/07/ID dt. 08.06.07, Nk Block IVEE
5) GO (MS) no. 101/08/ID dt. 07.07.2008, 4.8 Ha.
6) GO (MS) No. 39/2019/ID dt. 25.05.2019, Thottappally tranportation

We would like to bring to the knowledge that the name of our company has been changed from Indian Rare Earths Limited to IREL (India) Limited vide Certificate of Incorporation pursuant to change of name, Ministry of Corporate Affairs, Government of India dated 15.03.2019 (Corporate Identification Number U15100MH1950GOI008187). We would like to highlight that the name of the company only has been changed and there is no change or transfer of the ownership.

The Government Orders issued by Industries (A) department for Mining Leases of our NK Block II & IV (Chavara, Neendakara, Alappad and Ponmana villages), NK Block IVEE (Alappad, Ponmana & Ayanivelikulanga villages) , 4.8 Ha. (Alappad village) vide reference (2) to (5) above and GO for transportation from Thottappally harbour vide reference (6) above may be amended accordingly incorporating the change in name of the company.

A copy of the Certificate of Incorporation from Ministry of Corporate Affairs effecting the change in the name is attached for your kind intimation and future correspondences.

Thanking you,

Yours faithfully,
For IREL (India) Limited,

S. Suryakumar,
Chief General Manager and Head

Encl : Certificate of Incorporation pursuant to change of name

आईआरईएल (इंडिया) लिमिटेड

IREL (INDIA) LIMITED

(Formerly Indian Rare Earths Limited)

(भारत सरकार का उपक्रम / A Govt. of India Undertaking)

चवरा, कोल्लम - 691 583, केरल राज्य, भारत

Chavara, Kollam – 691 583, Kerala State, INDIA

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ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Company

CH/UHO/2019-20
25.07.2019

The Principal Secretary to Government,
Industries (A) department, Government of Kerala,
Thiruvanthapuram, Kerala

Sir,

Sub: Certificate of Incorporation pursuant to change of name- intimation regarding

Ref: 1) Certificate of incorporation pursuant to change of name dated 15.03.2019, Ministry of Corporate Affairs, Government of India
2) GO (MS) No. 32/2006/ID dt. 15.03.2006- Nk Block II & IV
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A copy of the Certificate of Incorporation from Ministry of Corporate Affairs effecting the change in the name is attached for your kind intimation and future correspondences.

Thanking you,

Yours faithfully,
For IREL (India) Limited,

25/7/2019

S. Suryakumar,
Chief General Manager and Head

Encl : Certificate of Incorporation pursuant to change of name

Subject: **Re: Fwd: certificate of Incorporation pursuant to change of name- intimation regarding**
To: "cgm-ch.irel" <cgm-ch@irel.co.in>

Date: 11/06/19 05:30 PM
From: amdhyd <amdhyd@ap.nic.in>
Sender: amdhyd@nic.in

Sir,

This has reference to the trailing e-mail on the subject. We thankfully acknowledge the receipt of your letter No.CH/UHO/2019-20/2073, dated 05.08.2019 intimating the change in the name of your company.

Regards,

From: cgm-ch.irel
Sent: Monday, October 28, 2019 2:57 PM
To: director.amd@gov.in
Cc: amdhyd@ap.nic.in ; R V Viswanath ; S Jayachand
Subject: Fwd: certificate of Incorporation pursuant to change of name- intimation regarding

Sir,

Ref: IREL Letter dated 05-08-2019 to the Director, AMDER, Hyderabad

This has reference to the above. Due to the incorporation pursuant to change of Name of our company from Indian Rare Earths Ltd. to IREL (India) Ltd. we had intimated vide letter no.CH/UHO/2019-20 dated 05-08-2019. The copy of the same letter is attached for your kind reference and record.

Please acknowledge the receipt of this letter through return mail for our record.

Regards
CGM & Head
IREL (India) Ltd., Chavara.

आईआरईएल (इंडिया) लिमिटेड

IREL (INDIA) LIMITED

(Formerly Indian Rare Earths Limited)

(भारत सरकार का उपक्रम / A Govt. of India Undertaking)

चवरा, कोल्लम - 691 583, केरल राज्य, भारत

Chavara, Kollam – 691 583, Kerala State, INDIA

CIN : U15100MH1950GOI008187

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इमैल Email cgm-ch@irel.co.in

वेबसाइट website www.irel.co.in

ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Company

CH/UHO/2019-20
05.08.2019

The Director,
Atomic Minerals Directorate for Exploration and Research,
1-10-153-156, Begumpet,
Hyderabad- 500016, Telangana State

4875

Sir,

Sub: Certificate of Incorporation pursuant to change of name- intimation regarding

We would like to bring to the knowledge that the name of our company has been changed from Indian Rare Earths Limited to IREL (India) Limited vide Certificate of Incorporation pursuant to change of name, Ministry of Corporate Affairs, Government of India dated 15.03.2019 (Corporate Identification Number U15100MH1950GOI008187). We would like to highlight that the name of the company only has been changed and there is no change or transfer of the ownership.

A copy of the Certificate of Incorporation from Ministry of Corporate Affairs effecting the change in the name is attached for your kind intimation and future correspondences.

Thanking you,

Yours faithfully,
For IREL (India) Limited,

S. Suryakumar,
Chief General Manager and Head

Encl : Certificate of Incorporation pursuant to change of name

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

CERTIFICATE OF ACCREDITATION

TESTING AND ANALYSIS LABORATORY, ENVIRONMENTAL TECHNOLOGY DIVISION, CSIR-NATIONAL INSTITUTE FOR INTERDISCIPLINARY SCIENCE AND TECHNOLOGY (CSIR-NIIST)

has been assessed and accredited in accordance with the standard

ISO/IEC 17025:2005

"General Requirements for the Competence of Testing & Calibration Laboratories"

for its facilities at

Industrial Estate P.O., Pappanamcode, Thiruvananthapuram, Kerala

in the field of

TESTING

Certificate Number TC-8086

Issue Date 19/11/2018 **Valid Until** 18/11/2020

This certificate remains valid for the Scope of Accreditation as specified in the annexure subject to continued satisfactory compliance to the above standard & the relevant requirements of NABL.

(To see the scope of accreditation of this laboratory, you may also visit NABL website www.nabl-india.org)

Signed for and on behalf of NABL

8907697010003002298

Anil Relia
Chief Executive Officer

National Accreditation Board for Testing and Calibration Laboratories

(A Constituent Board of Quality Council of India)

SCOPE OF ACCREDITATION

Laboratory Testing and Analysis Laboratory, Environmental Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Industrial Estate P.O., Pappanamcode, Thiruvananthapuram, Kerala

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-8086

Validity 19.11.2018 to 18.11.2020 Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		CHEMICAL TESTING		
I.	**Water**			
1.	**Surface Water & Irrigation Water**	pH	IS 3025 (Part 11)	4 to 10
		Total Alkalinity as $CaCO_3$	IS 3025 (Part 23)	1 mg/L to 500 mg/L
		Acidity as $CaCO_3$	IS 3025 (Part 22)	1 mg/L to 500 mg/L
		Chloride as Cl	IS 3025 (Part 32)	1 mg/L to 500 mg/L
		Calcium as Ca	IS 3025 (Part 40)	1 mg/L to 500 mg/L
		Magnesium as Mg	IS 3025 (Part 46)	1.0 mg/L to 250 mg/L
		Sodium as Na	IS 3025 (Part 45)	1.0 mg/L to 250 mg/L
		Potassium as K	IS 3025 (Part 45)	1.0 mg/L to 100 mg/L
		Sulphate as SO_4	IS3025(Part 24)	1 mg/L to 100 mg/L
		Dissolved Phosphate PO_4	IS 3025 (Part 31)	1 mg/L to10 mg/L
		Nitrite-N	IS 3025 (Part 34)	0.10 mg/L to 2.00 mg/L
		Silica as SiO_2	IS 3025 (Part 35)	0.50 mg/L to 100 mg/L
		Conductivity	IS 3025 (Part 14)	10 µS/cm to 2000 µS/cm
		Total Dissolved Solids	IS 3025 (Part 16)	10 mg/L to 500 mg/L
		Total Hardness as $CaCO_3$	IS 3025 (Part 21)	1 mg/L to 500 mg/L
		Ammoniacal Nitrogen (as NH_3-N)	IS 3025 (Part 34)	1.0 mg/L to 100 mg/L
		COD	IS 3025 (Part 58)	5 mg/L to 1500 mg/L
II.	**POLLUTION & ENVIRONMENT**			
1.	**Waste Water**	BOD at 27 °C for 3 days	IS 3025 (Part 44)	1.0 mg/L to 100 mg/L
		pH	IS 3025 (Part 11)	4 to 10
		Acidity as $CaCO_3$	IS 3025 (Part 22)	1 mg/L to 500 mg/L
		Conductivity	IS 3025 (Part 14)	10 µS/cm to 40000 µS/cm

Deepak Kumar Sharma
Convenor

Anuja Anand
Program Manager

SCOPE OF ACCREDITATION

Laboratory Testing and Analysis Laboratory, Environmental Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Industrial Estate P.O., Pappanamcode, Thiruvananthapuram, Kerala

Accreditation Standard ISO/IEC 17025: 2005

Certificate Number TC-8086

Validity 19.11.2018 to 18.11.2020 **Last Amended on** --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		COD	IS 3025 (Part 58)	5 mg/L to 1500 mg/L
		Total Dissolved Solids	IS 3025 (Part 16)	10 mg/L to 500 mg/L
		Iron as Fe	IS 3025 (Part 53)	0.05 mg/L to 1.0 mg/L
		Hexavalent Chromium	IS 3025 (Part 52)	0.02 mg/L to 1.0 mg/L
		Total Kjeldhal Nitrogen	IS 3025 (Part 34)	1 mg/L to 200 mg/L
2.	Soil/Sediment, Wastes, Others (Residue from Combustion Processes)	**Non-Ortho (NO)-PCBs**		
		PCB 81	USEPA 8290 A EU regulations 644 & 771	10 ng/kg to 10000 ng/kg
		PCB 77		10 ng/kg to 10000 ng/kg
		PCB 126		40 ng/kg to 10000 ng/kg
		PCB 169		35 ng/kg to 10000 ng/kg
		Polychlorinated Dibenzo Dioxins and Furans (PCDD/F)		
		2,3,7,8 -TCDF	USEPA 8290 A EU regulations 644 & 771	15 ng/kg to 2560 ng/kg
		2,3,7,8-TCDD		25 ng/kg to 2560 ng/kg
		2,3,4,7,8 PeCDF		20 ng/kg to 2560 ng/kg
		1,2,3,7,8-PeCDF		45 ng/kg to 2560 ng/kg
		1,2,3,7,8-PeCDD		50 ng/kg to 2560 ng/kg
		1,2,3,6,7,8-HxCDD		45 ng/kg to 2560 ng/kg
		1,2,3,6,7,8-HxCDF		55 ng/kg to 2560 ng/kg
		2,3,4,6,7,8-HxCDF		110 ng/kg to 2560 ng/kg
		1,2,3,7,8,9-HxCDF		65 ng/kg to 2560 ng/kg
		1,2,3,4,6,7,8-HpCDF		85 ng/kg to 2560 ng/kg
		1,2,3,4,6,7,8 HpCDD		205 ng/kg to 2560 ng/kg
		1,2,3,4,7,8-HxCDF		25 ng/kg to 2560 ng/kg
		1,2,3,7,8,9-HxCDD		45 ng/kg to 2560 ng/kg
		1,2,3,4,7,8,9-HpCDF		50 ng/kg to 2560 ng/kg
		1,2,3,4,7,8 HxCDD		20 ng/kg to 2560 ng/kg
		OCDF		50 ng/kg to 2560 ng/kg
		OCDD		270 ng/kg to 128000 ng/kg
		Non-dioxin like (NDL) PCBs		
		PCB-28	USEPA 8290 A	15 ng/kg to 10000 ng/kg

Deepak Kumar Sharma
Convenor

Anuja Anand
Program Manager

National Accreditation Board for Testing and Calibration Laboratories

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SCOPE OF ACCREDITATION

Laboratory	**Testing and Analysis Laboratory, Environmental Technology Division, CSIR-National Institute for Interdisciplinary Science and Technology (CSIR-NIIST), Industrial Estate P.O., Pappanamcode, Thiruvananthapuram, Kerala**
Accreditation Standard	**ISO/IEC 17025: 2005**
Certificate Number	**TC-8086**
Validity	**19.11.2018 to 18.11.2020**

Last Amended on --

Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		PCB-52	EU regulations 644 & 771	15 ng/kg to 10000 ng/kg
		PCB-101		15 ng/kg to 10000 ng/kg
		PCB-153		20 ng/kg to 10000 ng/kg
		PCB-180		15 ng/kg to 10000 ng/kg
		PCB-138		20 ng/kg to 10000 ng/kg
		Mono Ortho (MO) PCBs		
		PCB-167	USEPA 8290 A EU regulations 644 & 771	25 ng/kg to 10000 ng/kg
		PCB-156		20 ng/kg to 10000 ng/kg
		PCB-157		15 ng/kg to 10000 ng/kg
		PCB-189		25 ng/kg to 10000 ng/kg
		PCB-123		10 ng/kg to 10000 ng/kg
		PCB-118		15 ng/kg to 10000 ng/kg
		PCB-114		30 ng/kg to 10000 ng/kg
		PCB-105		20 ng/kg to 10000 ng/kg
III.	**ATMOSPHERIC POLLUTION**			
1.	**Ambient Air, Stack Emission**	**Non-Ortho (NO) - PCBs**		
		PCB 81	USEPA 8290 A EU regulations 644 & 771	10 ng/Nm^3 to 10000 ng/Nm^3
		PCB 77		10 ng/Nm^3 to 10000 ng/Nm^3
		PCB 126		40 ng/Nm^3 to 10000 ng/Nm^3
		PCB 169		35 ng/Nm^3 to 10000 ng/Nm^3
		Polychlorinated dibenzo dioxins and furans (PCDD/F)		
		2,3,7,8 -TCDF	USEPA 8290 A EU regulations 644 & 771	15 ng/Nm^3 to 2560 ng/Nm^3
		2,3,7,8-TCDD		25 ng/Nm^3 to 2560 ng/Nm^3

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		2,3,4,7,8 PeCDF		20 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,7,8-PeCDF		45 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,7,8-PeCDD		50 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,6,7,8-HxCDD		45 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,6,7,8-HxCDF		55 ng/Nm^3 to 2560 ng/Nm^3
		2,3,4,6,7,8-HxCDF		110 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,7,8,9-HxCDF		65 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,4,6,7,8-HpCDF		85 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,4,6,7,8 HpCDD		205 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,4,7,8-HxCDF		25 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,7,8,9-HxCDD		45 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,4,7,8,9-HpCDF		50 ng/Nm^3 to 2560 ng/Nm^3
		1,2,3,4,7,8 HxCDD		20 ng/Nm^3 to 2560 ng/Nm^3
		OCDF		50 ng/Nm^3 to 2560 ng/Nm^3
		OCDD		270 ng/Nm^3 to 128000 ng/Nm^3

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		Non-Dioxin like (NDL) PCBs		
		PCB-28	USEPA 8290 A EU regulations 644 & 771	15 ng/Nm^3 to 10000 ng/Nm^3
		PCB-52		15 ng/Nm^3 to 10000 ng/Nm^3
		PCB-101		15 ng/Nm^3 to 10000 ng/Nm^3
		PCB-153		20 ng/Nm^3 to 10000 ng/Nm^3
		PCB-180		15 ng/Nm^3 to 10000 ng/Nm^3
		PCB-138		20 ng/Nm^3 to 10000 ng/Nm^3
		Mono Ortho (MO)-PCBs		
		PCB-167	USEPA 8290 A EU regulations 644 & 771	25 ng/Nm^3 to 10000 ng/Nm^3
		PCB-156		20 ng/Nm^3 to 10000 ng/Nm^3
		PCB-157		15 ng/Nm^3 to 10000 ng/Nm^3
		PCB-189		25 ng/Nm^3 to 10000 ng/Nm^3
		PCB-123		10 ng/Nm^3 to 10000 ng/Nm^3
		PCB-118		15 ng/Nm^3 to 10000 ng/Nm^3
		PCB-114		30 ng/Nm^3 to 10000 ng/Nm^3
		PCB-105		20 ng/Nm^3 to 10000 ng/Nm^3

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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
IV.	**RESIDUES IN FOOD PRODUCTS**			
1.	**Chlorinated Dioxins and Dibenzofurans, Polychlorinated Biphenyls in: Fish and Fish Products, Egg, Meat and Meat Products, Milk and Dairy Products**	**Non-Ortho- (NO) PCBs**		
		PCB 81	USEPA 8290 A EU regulations 644 & 771	10 ng/kg to10000 ng/kg
		PCB 77		10 ng/kg to10000 ng/kg
		PCB 126		40 ng/kg to10000 ng/kg
		PCB 169		35 ng/kg to10000 ng/kg
		Polychlorinated dibenzo dioxins and furans (PCDD/F)		
		2,3,7,8 -TCDF	USEPA 8290 A EU regulations 644 & 771	15 ng/kg to 2560 ng/kg
		2,3,7,8-TCDD		25 ng/kg to 2560 ng/kg
		2,3,4,7,8 PeCDF		20 ng/kg to 2560 ng/kg
		1,2,3,7,8-PeCDF		45 ng/kg to 2560 ng/kg
		1,2,3,7,8-PeCDD		50 ng/kg to 2560 ng/kg
		1,2,3,6,7,8-HxCDD		45 ng/kg to 2560 ng/kg
		1,2,3,6,7,8-HxCDF		55 ng/kg to 2560 ng/kg
		2,3,4,6,7,8-HxCDF		110 ng/kg to 2560 ng/kg
		1,2,3,7,8,9-HxCDF		65 ng/kg to 2560 ng/kg
		1,2,3,4,6,7,8-HpCDF		85 ng/kg to 2560 ng/kg
		1,2,3,4,6,7,8 HpCDD		205 ng/kg to 2560 ng/kg
		1,2,3,4,7,8-HxCDF		25 ng/kg to 2560 ng/kg
		1,2,3,7,8,9-HxCDD		45 ng/kg to 2560 ng/kg
		1,2,3,4,7,8,9-HpCDF		50 ng/kg to 2560 ng/kg
		1,2,3,4,7,8 HxCDD		20 ng/kg to 2560 ng/kg
		OCDF		50 ng/kg to 2560 ng/kg
		OCDD		270 ng/kg to 128000 ng/kg
		Non-Dioxin like (NDL)- PCBs		
		PCB-28	USEPA 8290 A EU regulations 644 & 771	15 ng/kg to 10000 ng/kg
		PCB-52		15 ng/kg to 10000 ng/kg
		PCB-101		15 ng/kg to 10000 ng/kg
		PCB-153		20 ng/kg to 10000 ng/kg
		PCB-180		15 ng/kg to 10000 ng/kg

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Anuja Anand
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Sl.	Product / Material of Test	Specific Test Performed	Test Method Specification against which tests are performed	Range of Testing / Limits of Detection
		PCB-138		20 ng/kg to 10000 ng/kg
		Mono Ortho (MO)-PCBs)		
		PCB-167	USEPA 8290 A EU regulations 644 & 771	25 ng/kg to 10000 ng/kg
		PCB-156		20 ng/kg to 10000 ng/kg
		PCB-157		15 ng/kg to 10000 ng/kg
		PCB-189		25 ng/kg to 10000 ng/kg
		PCB-123		10 ng/kg to 10000 ng/kg
		PCB-118		15 ng/kg to 10000 ng/kg
		PCB-114		30 ng/kg to 10000 ng/kg
		PCB-105		20 ng/kg to 10000 ng/kg

Deepak Kumar Sharma
Convenor

Anuja Anand
Program Manager

DEPARTMENT OF AQUATIC BIOLOGY & FISHERIES
UNIVERSITY OF KERALA
(Reaccredited by NAAC with 'A' Grade)
Karyavattom, Thiruvananthapuram 695 581, Kerala, India
Telefax: +91 471-2308131; Email: aquaticbiology@gmail.com
(UGC-SAP Centre of Advanced Study)

Reference No:_____ Dated 25th July 2019

To

The EIA Coordinator
CSIR-NIIST, Thiruvanthapuram

Sub.: Request for checking migratory birds in the map
Ref.: The map showing IREL 180 ha mine lease and its surroundings

Sir,

This has reference to your map showing the IRE mine lease IV EE. The outer circle of the figure intersects Astamudi lake in the south which has about 57 species of birds including six that are migratory.

No migratory birds are reported or observed in the IREL 180ha mine lease location.

Thanking you

Head

HEAD
Dept. of Aquatic Biology & Fisheries
University of Kerala, Karyavattom
Thiruvananthapuram 695 581

IRE Ltd, Mineral Separation Plant, Chavara

1. Introduction

Mining of beach sand minerals and processing the raw material to produce Ilmenite, Rutile, Zircon and its products, Sillimanite and Monazite has been continued in the Mineral Separation Plant at IREL, Chavara. The Monazite Upgradation Project (MUP) was operated and continued to produce monazite concentrate of nearly 96% purity. Approximately 600 tons of monazite product (+96% grade) is stocked. Monazite was not transported to OSCOM, Odisha during the year. Radiological surveillance is being done regularly and all the occupational workers associated with these operations have been provided TLD monitoring.

2. Radiation dose data:

The occupational radiation exposure to all personnel working in the radioactive plants was carried out using TLDs. The dose data is given in Table 1.

Table 1: Dose Data for IREL, Chavara

Details	Regular	Temporary
Institutional dose (Person Sv)	0.0228	0.0057
No of persons	65	18
Average individual dose (mSv)	0.35	0.32
Maximum Individual Dose (mSv)	2.85	2.20
No. of persons exceeding 20 mSv	Nil	Nil
Frequency distribution	All < 6 mSv	All < 6 mSv

At the Chavara plant, radiation exposures are comparable to that of the previous year. Internal exposure contribution was found to be around 28 % of the total institutional dose.

3. Radioactive waste and effluents:

3.1. Solid Waste:

The gross alpha and beta activity concentrations in the Wet section-solid tailings were below 1 $Bq.g^{-1}$. Solid waste from DWUP with less than 2% heavy minerals is used for refilling mined out areas. MSP tailings are being recycled with fresh sand input into the plant.

3.2. Liquid effluent:

The effluent is generated mainly in the wet processing of minerals. The radioactivity levels are comparable with the water sample levels of Natural High Background Radiation Area (NHBRA). The activity levels in liquid effluents are given in Table 2.

Table 2: Activity of Liquid Effluents

Gross Alpha ($Bq.1^{-1}$)		Gross Beta ($Bq.1^{-1}$)	
Mean	Range	Mean	Range
0.008 ± 0.004	0.004-0.013	0.010 ± 0.004	0.005 -0.014
Discharge limits	*3.7*	*37*	

Volume of liquid effluent discharged to the sea: The effluent discharged from MUP is re-circulated back to the plant.

Liquid effluent releases exempted vide letter No.AERB/91/18/92 dtd.01.01.92.

3.3. Gaseous effluents:

Airborne radioactive discharges were not present and samples analysed showed activity below detectable levels.

4. Radiological status

4.1. Radiation field at different locations:

The radiation field in the Monazite upgradation project (MUP) varied in the range 0.2 – 70 $\mu Gy.h^{-1}$. The mining area shows higher radiation field as compared to the refilled areas. The general radiation background in minerals separation plant (MSP) was in the range 0.5 – 3.0 $\mu Gy.h^{-1}$. The maximum radiation field over the monazite trenches above the sand topping is 2.4$\mu Gy.h^{-1}$. At the general areas and utilities the radiation background was 0.6 $\mu Gy.h^{-1}$. There are no significant changes in radiation levels in the facility as compared to the previous year.

Table 3: Radiation Field at different Plants and Locations

Plant	Location	Radiation Field $\mu Gy.h^{-1}$
Mining	DWUP 1 – mining area	4.5 – 4.7
	DWUP 1 – refilled area	0.5 – 0.6
	Raw sand godown	2.0 – 2.4
HUP	Plant	3.0 – 3.6
	MAG Godown	3.2 – 6.2
	NON – MAG Godown	3.0 – 5.8
	ILM Plant – ground level	2.0 – 3.0
	ILM Plant – HT separators	2.2 – 3.0
	Rutile – Non mag FBD	2.0 – 5.0
	Rutile CARRARA HTS	2.0 – 5.0
	Rutile Bagging area	0.6 – 3.0
Mineral Separation Plant	Zircon bagging area	0.6 – 2.0
	Wet section Sillimanite area	0.6 – 3.0
	Wet table platform	0.5 – 0.6
	Kelsey Jig platform	0.6 – 3.0
	Central passage	0.5 – 1.5
Zircon Opacifier Plant	General background	0.6 – 3.0
	Zirflor bagging area	0.6- 3.0
Monazite concentrate storage trenches	Monazite dump 1	2.3 – 2.4
	IInd monazite storage trench – above concreting	2.3 – 2.5
	Monazite dump III, above sand topping	2.3 – 2.4
	New monazite dumpNo.4	2.3- 2.6
	Tailings yard	0.6
General areas	Administrating building	0.6
	Dispensary	0.6
Monazite Upgradation Plant	Monazite Feed Silo	23 – 40
	Product Silo	3.3 – 70
	MC – 2 Conveyor	2.7 – 6.0
	ESPS	2.7 – 12

	IRMS	13 – 20
	Monazite storage bin	40 – 60
	Control Cabin	0.2 – 0.4
	Barricade (West)	2.7 – 90
	Barricade (East)	3.3 – 10

4.2. Air activity:

The air activity (^{232}Th) levels at the existing plants are comparable to those of the previous year. Average thoron daughter concentration in the MSP is 1.16 ± 0.72 mWL (Range = 0.3 – 4.5 mWL). The average activity (^{232}Th) is 0.005 Bq.m^{-3} which is insignificant as compared to the DAC limit of 0.22 Bq.m^{-3}.

In the MUP the average Thoron daughter concentration is 2.1 ± 0.88 mWL and the average air activity(^{232}Th) is 0.008 ± 0.005 Bq.m^{-3} . The levels are comparable to the previous year. No significant radiological impact is observed due to the operation of MUP in the overall radiological status of the minerals plant.

The air activity range for different areas in the plant is given in Table 4.

Table 4: Air activity within the plant premises and MUP

Area	Thoron daughter (mWL)	Th – 232 (Bq.m^3)
Ilmenite section	0.71 – 4.51	0.004 – 0.012
Non – magnetic godown	0.36 – 0.86	0.002 – 0.004
Zircon section	0.30 – 2.15	0.002 – 0.009
Rutile section	0.42 – 1.92	0.003 – 0.011
ZOP	0.32 – 2.85	0.002 – 0.012
Outside Engineers cabin	0.33 – 1.88	0.002 – 0.006
Monazite Upgradation Plant		
Monazite Feed Silo	0.81 – 6.20	0.001 – 0.025
Product Silo	0.75 – 5.32	0.002 – 0.024
MC – 2 Conveyor	0.01 – 5.47	0.003 – 0.025
ESPS	0.50 – 6.04	0.002 – 0.023
IRMS	0.63 – 4.97	0.002 – 0.025
Control Cabin	0.27 – 3.83	0.002 – 0.023
Barricade (West)	0.81 – 3.63	0.002 – 0.024
Barricade (East)	0.66 – 3.90	0.001 – 0.024
Limits DAC	*1000*	*0.22*

No. of air samples : 180

4.3. Radioactive material shipment

There was no monazite consignment to IREL OSCOM during the year.

5. Industrial Hygiene and Safety

5.1. Safety related unusual occurrence = Nil

5.2. *Accident statistics:* No reportable accidents

5.3. Plant working condition:

Physical mineral separation processes in the plant results in generation of airborne dust. Measurement of dust concentrations are carried out in the plant regularly. The dust levels varied from 0.13 to 1.07 mg.m^{-3} with an average value of 0.35 mg.m^{-3}. The respirable part of the dust amounted to 25 % of the total (TLV, respirable dust = 1.0 mg.m^{-3}, free silica in the dust =15%). No instance of levels above TLV was noticed. The airborne concentrations of dust inside the plant are given in the Table 5. There are no significant changes in the dust concentration levels in different locations in the plant compared to the previous year.

Table 5: Airborne dust monitoring

Location	Dust concentration (mg.m^{-3})	
	Range	Mean
Ilmenite section	0.17 – 0.83	0.44 ± 0.17
Non – magnetic godown	0.13 - 0.33	0.23 ± 0.05
Zircon section	0.20 - 0.53	0.38 ± 0.10
Rutile section	0.27 – 1.07	0.42± 0.27
ZOP	0.13 - 0.47	0.29 ± 0.07
Outside Engineers cabin	0.20 - 0.33	0.24 ± 0.04

No. of air samples: 180
Average dust concentration: 0.33 ± 0.13 mg.m^{-3}, (Respirable is 25 %)
TLV, (respirable): 1.0 mg.m^{-3}

5.4. Noise Level Survey:

Sound pressure levels ranged from 70 – 90dBA. The maximum sound levels were noted at the compressor and generator room. Earplug and earmuffs have been provided in these locations.

Table 6: Noise Level in IREL Chavara

Location	Noise level (dBA)
DWUP	75 - 80
HUP	70 - 76
Ilmenite Plant	76 - 82
Ilmenite – FBD	85
Rutile FBD	85
MSP – Dry Section	72
MSP – Wet Section	72
ZOP – Cabin	72
ZOP – Bag filling	81
Compressor room	90
Substation	75

5.5. Illumination levels

The illumination levels in the plant were maintained as per requirement and are given in Table 7.

Table 7: Illumination Level in IREL Chavara

Location	Illumination level (Lux)
Zircon Opacifier Plant	120
Compressor room	130
11 KV Substation	220
DWUP – II	150
MSP – Dry section	155
MSP – Wet section	150
Ilmenite Plant	160
Furnace oil Tank	50
HUP Plant	155
Generator room	140

5.6. Emergency preparedness

An ambulance and emergency first – aid were available at the plant round the clock. Fire extinguishers were in position at different areas. One emergency mock drill and six fire drills were conducted.

5.7. Medical Surveillance

The plant has a dispensary with one medical officer. Details of medical examination carried out are given in Table 8.

Table 8: Medical surveillance in IREL Chavara

Canteen employees	28
Other radiation workers	38
Mine workers	05
Workers in dangerous operations	11
Others	62
Ponmana mining forum	87
Bagging forum	120

5.8. Safety Training

Safety training was provided to 200 regular workmen.

6. Environmental Surveillance

6.1. External gamma radiation monitoring

An area of approximately 2.50 acres was mined and 1.50 acres was refilled. The radiation fields at the mining area were in the range 4.0-5.0 $\mu Gy.h^{-1}$. The refilled areas showed radiation field in the range of 0.5-0.6 $\mu Gy.h^{-1}$. Mined area rehabilitation: 50 tree saplings of different types were planted in the refilled areas.

6.2. Air monitoring

Air samples collected beyond the plant boundary at distances up to 2 km showed activity due to ^{232}Th ranging from 3 – 9 $mBqm^{-3}$. These levels represent air activity levels normally observed at HBRA.

6.3. Monitoring of ground water

Ground water samples were collected from the wells situated close to the mining area (MRP II) at Karithura and other nearby locations. Table 9 gives the radioactivity content in the samples collected. The levels in the ground water are comparable with the natural levels at HBRA's and no variation observed compared to the previous year.

Table 9: Monitoring of ground water outside the plant premises

Location	Gross α ($Bq.l^{-1}$)	Gross β($Bq.l^{-1}$)
Karithura (Kinarummoodu)	0.01 - 0.02	0.01 - 0.03
Kulangarbhagam well	0.01 -0.03	0.01 - 0.03
SY132 area well	0.01 - 0.02	0.02 - 0.04
TS Canal water	0.01 - 0.03	O.01- 0.03

7. Others

7.1 Nucleonic Density Gauge Source Removal Operation at IREL Chavara

Ten Nucleonic density gauges (having ^{137}Cs sealed and encapsulated source of 5.4 mCi each) were not in use in the plant for a long period of time. The source capsules were retrieved and sent to BRIT, Mumbai after clearance from AERB. The retrieval of source capsules and safe transfer to transport flasks were performed by two experts from BRIT facility, Mumbai. The capsules collected from five gauges were put in a small plastic vial kept inside a small transportation lead flask (Type A) of 25mm shield thickness. The total activity contained in each vial and flask was 27 mCi (1.0GBq). Two transportation flasks were used to collect ten source capsules. No measurable dose was received by HPU, MK staff and IREL Chavara staff for this operation. All conditions for the safe transport of radioactive material as stipulated by RSD/AERB were followed.

7.2 Public hearing : A public hearing on the proposed mining at Vellanathuruthu , Chavara was conducted at Kollam collectorate . The meeting was chaired by Kollam collector. Member of Kerala State Pollution Control Board was also present . Presentations were made by DGM(Mining),IRE Chavara and NIIST Trivandrum. Dr.(Smt)Sujata R. RSO,IRE Chavara and Shri.Ajesh Kumar attended.

7.3 NFSC-1 Meeting : The second meeting of NFSC-1 was held at AERB on 19th Nov. 2018 to discuss the license renewal of facility at IRE Chavara. Officer –in-charge attended the meeting along with DGM (Mining, Safety) and DGM(Prod).

8. Recommendations

8.1 Status of recommendations of 2017

1. Use of TLD by radiation workers should be strictly enforced.	**Implemented**

2. IRE L, Chavara proposes to undertake mining and mineral separation in new areas such as Vellanathuruthu in addition to the existing operations. This will require extensive environmental monitoring. The plant management should provide adequate and dedicated manpower for carrying out the routine radiological monitoring of the plant , collection and analysis of samples , compilation of data etc. so that reports on the radiological status of the plant can be sent to the regulatory authority well within the stipulated time.	Partly Implemented

Recommendations for 2018

1. The accumulated stock of more than 600 tons of Monazite product(+96% grade) should be shifted to IRE L, OSCOM unit at the earliest.

Pre-Operational Radiological Monitoring at the proposed Mineral Separation Plant site of IREL, Chavara at Vellanathuruthu coastal region of Kollam District, Kerala

Introduction

The pre operational radiological monitoring of the proposed mining area at Vellanathuruthu region was carried out by Health Physics unit (HPU) of IREL Udyogamandal along with HPU of IREL Manavalakurichi.. The site is located in the Alappad village of Karunagappally block and lies between the latitude of N 9° 02' 44 to 9° 03' 74 and longitude 76° 50'61 to 76° 56'77.

External Gamma radiation monitoring

An extensive radiation survey of the mining area was carried out using a sensitive Geiger Muller tube detector integrated with Global Position System (GPS) and a pocket size radiation survey meter (RadEye PRD) which incorporates a high sensitivity NaI(Tl) detector with an integrated photo multiplier tube. Measurements were recorded at 1 m above the ground level. .Gamma ray exposure rate at eighteen locations along with latitude and longitude values is given in Table 1

Table 1. External Gamma radiation monitoring

SL No	Location	Radiation Field (μGy/h)	Latitude	Longitude
1	Pushpamangalam House	0.4	9.0244	76.5139
2	Kunnumpurath House	1.7	9.0244	76.5129
3	Thuppassery House	1.7	9.0267	76.5112
4	Thekke thuppassery	2.0	9.0271	76.5115
5	New mining area	1.2	9.0285	76.5108
6	Pandarathuruth	1.7	9.0300	76.5096
7	Mukkumpuzha junction	0.5	9.0308	76.5122
8	Panamoottil	1.2	9.0305	76.5095
9	Haribhavanam	1.1	9.0310	76.5093
10	Alappad Govt L.P School	1.7	9.0328	76.5085
11	Alappad Church	1.7	9.0357	76.5073
12	Panikkar Kadav	0.7	9.0374	76.5061
13	Kurusum Moottil	2.7	9.0362	76.5069
14	Nishayalam	1.4	9.0348	76.5677
15	Kollampurath	1.3	9.0314	76.5095
16	Edayil House	1.3	9.0314	76.5095
17	Padattedath	1.35	9.0318	76.5080
18	Ramanamadam	1.4	9.0320	76.5084

Soil sample Analysis

Soil samples were collected from 10 different locations extending from MRP tailings area to Panikkar Kadav Bridge in the proposed mining area which covers 2 km length and 300 m width. Locations are identified based on the population density and accessibility of the region. Three samples were collected from each location. The composite samples were analyzed for Gross alpha and gross beta activity . The results are given in table 2.

Table 2. Gross alpha and gross beta activity in soil samples

SL. No	Location	Gross α (Bq/g)	Gross β (Bq/g)
1	Nishayalam Pandarathuruthu	8.7±2.4	4.1±0.7
2	Haribhavanam Pandarathuruthu	4.8 ±2.0	6.3±1.4
3	Kurushmootil, Panickerkadavu	6.7 ±2.1	2.8±0.9
4	Panamoottil Pandarathuruthu	7.6 ±2.4	5.3±1.1
5	Edayilaveedu, Pandarathuruthu	7.3±2.4	4.6±0.9
6	Panamoottil south Pandarathuruthu	4.2±2.2	3.4±0.8
7	Kollapurath Pandarathuruthu	8.9±2.3	1.9±0.9
8	Padattedath Pandarathuruthu	8.6±2.2	4.5±1.2
9	Ramanamadam Pandarathuruthu	5.7±2.4	3.8±1.0
10	Pushpamangalath Vellanathuruthu	3.9±2.4	3.3±1.3

Water Sample Analysis

Well water samples collected from sampling locations were analyzed for gross alpha and beta activity. Results are given in table 3.

Table 3. Gross alpha and gross beta activity in well water samples

SL. No	Location	Gross α (Bq/lit)	Gross β (Bq/lit)
1	Kunnumpurath Vellanathuruthu	0.013±0.007	0.10±0.02
2	Santhibhavanam Vellanathuruthu	0.012±0.007	0.049±0.018
3	Mangalath, Pandarathuruth	0.007±0.004	0.034±0.018
4	Kollapurath, Pandarathuruth	0.012±0.007	0.044±0.018
5	Panamoottil Pandarathuruthu	0.019±0.008	0.087±0.02
6	Thuppasseril Vellanathuruthu	0.007±0.004	0.085±0.02
7	Theekethuppasseril Vellanathuruthu	0.016±0.008	0.034±0.018
8	Padattedath Pandarathuruthu	0.011±0.007	0.078±0.019
9	Panamoottil Pandarathuruthu	0.012±0.007	0.034±0.018
10	Kanakalayam Pandarathuruthu	0.010±0.007	0.109±0.02

Conclusions

The Pre operational radiological monitoring of the proposed mining area of IREL Chavara at Vellanathuruthu region was carried out by Health Physics unit (HPU) of IREL Udyogamandal and Manavalakurichi during September-October 2017. External gamma radiation monitoring and analysis of well water and soil samples were carried out.

The radiation field in the proposed site ranged from 0.4 – 2.7 μGy/h depending on the monazite content in the soil. The gross alpha activity in the soil samples ranged from 3.9-8.9 Bq/g and the gross beta activity ranged from 1.9-6.3 Bq/g. The gross alpha activity in the well water samples ranged from 0.007-0.016 Bq/lit and the gross beta activity ranged from 0.034 - 0.109 Bq/lit.

आईआरईएल (इंडिया) लिमिटेड
IREL (INDIA) LIMITED
(Formerly Indian Rare Earths Limited)
(भारत सरकार का उपक्रम / A Govt. of India Undertaking)
चवरा, कोल्लम - 691 583, केरल राज्य, भारत
Chavara, Kollam – 691 583, Kerala State, INDIA
CIN : U15100MH1950GOI008187

फोन Phone 0476-2680701-5
फेक्स Fax 0476-2680141
इमैल Email cgm-ch@irel.co.in
वेबसाइट website www.irel.co.in

ISO 9001:2015, ISO 14001:2015 & OHSAS 18001:2007 Company

IREL/CH/MNG/IVEE/2019
05.11.2019

Shri Sundeep,
Director, IA Division (Non Coal Mining sector),
A-106, Agni Block, I[s] floor,
MoEF & CC, New Delhi- 110003

Sub: Amendment in existing EC – specific condition (iii) for Buffer Zone – Regarding

Ref: 1) IREL (India) Limited New proposal No: IA/KL/MIN/25461/2014; IA/KL/MIN/109526/2008; Old File No: 11-36/2008-IA-III; Old proposal No: IA/KL/MIN/85725/2008.
2) EC- MoEF&CC letter F.No.11-36/2008.IA.III dated 01.03.2011
3) Item 2.2 of agenda for 7th EAC (Non-coal mining) meeting held on 30.07.2019.
4) MOEF & CC letter F.NO.J-11015/227/2015-IA-II (M) dated 14.10.2019.

IREL (India) Limited, Chavara is a Government of India undertaking functioning under the Administrative control of Department of Atomic energy(DAE), is engaged in Mining ,Mineral separation and Marketing of Atomic Minerals (part B of First Schedule of Mines & Minerals (Development and Regulation Act, 1957, Beach Sand Minerals) from Chavara deposit in Kollam district of Kerala State since 1965. Besides Chavara unit, IREL has mining and processing units at Manavalakurichi in Kanyakumari district (Tamilnadu) and at Chatrapur in Ganjam District (Odisha). The Monazite and Zircon minerals produced by IREL are used for strategic importance and applications by Department of Atomic Energy Nuclear Programmes.

Government of Kerala granted mining lease for an area of 180 Ha vide G.O. (Ms) No. 746/07/ID, Dated 08.06.2007) in favour of IREL for mining of Beach Sand Minerals viz: Ilmenite, Rutile, Zircon, Sillimanite, Leucoxene, Monazite etc. Vide MoEF&CC letter F.No.11-36/2008.IA.III dated 01.03.2011, the lease has been accorded EC & CRZ clearance in the year 2011.The said mining lease contains monazite above threshold values prescribed under the provisions of Atomic Mineral Concession Rules 2016, dated 11.07.2016.

Our proposal was considered as per item 2.1 of agenda for 6thEAC (Non-coal mining) meeting held on 27.06.2019 & item 2.2 of agenda for 7th EAC (Non- Coal Mining) meeting held on 30.07.2019, our proposal was considered and during appraisal, EAC sought Additional clarification details vide

reference (3) above. As per point (ix), IREL is submitting an application for amendment in specific condition (iii) for the buffer zone along the canal of the existing EC.

In this regard, we propose to amend the condition regarding buffer zone along canal in existing EC due to the following reasons and details:

1) Our Inland deposits are placer deposits which have originated from the weathering of Archean crystalline rocks Western Ghats and are deposited millions of year back all along the coast.
2) The deposit is rich in Atomic Minerals are an asset and resource is having strategic importance for development of our nation, with regard to power security.
3) Our process is similar to harvesting of minerals without involving drilling and blasting because mineral are already naturally available in liberated form (Loose sand soil) and do not involve any chemical hazardous material. Our Mining is wet process with no dust pollution. Periodical monitoring is being done for air and water quality and there is no significant change observed. Also Hazardous waste analysis (TCLP analysis) is done for pre and post Mining area for the presence of Hazardous materials as per constituents of Schedule II of Hazardous & other waste (Management & trans boundary Management) Rules, 2015 and there all the parameters are within limits.
4) The permission from Inland waterways Authority of India is granted to dredge and recover the mineral sand from canal (National Waterways -3which is under IWAI). The dredging also facilitates the navigation through canal.
5) The area observed by RO, MoEF&CC, Bangalore in their compliance report is barren land with sandy soil with isolated no-yielding coconut plantation. No rare or endangered species is observed in our terrestrial and ecological survey.
6) The average width of the available deposit is limited, even at some locations, it is only 120mtrs. Leaving a barrier of 50 metre from the canal while undertaking Mining will lead to loss of huge quantity of Atomic Minerals. More over the average depth of Mining is only 8 metre without any overburden. Hence the conditions like 50 metre barrier for buffer zone, which may be applicable for large open cast Mines having deposits of considerable depth of Mining with over burden, need not be made applicable for our case. Please note that these Atomic Mineral deposits are not available outside CRZ area and is of strategic importance to the Nation's Nuclear programme.
7) IREL is Mining Atomic Mineral (Beach sand Minerals) and as per National Mineral Policy, 2019, Clause 6.9, **Beach Sand Minerals** "Efforts will be made to encourage extraction of the replenishable deposits of beach sand minerals for improved economic growth by ensuring coordination between the different agencies viz., State Governments, Ministry of

Environment, Forests & Climate Change, Indian Bureau of Mines, Department of Atomic Energy, Atomic Minerals Directorate for Exploration and Research, and Department of Customs and Excise etc. so that regulation of mining of beach sand minerals is in conformity with the mining and other related laws, while also conforming to national security requirements and established international protocols".

8) Mining of these atomic minerals are permitted within the Coastal Regulation Zone notification under the section 3(x)(iii(c) , 4(ii)(g) , para 8 I (ii) (h) of the CRZ notification 2011 as amended in 2017.

9) Surface mining usually renders the land unsuitable for other uses unless it is restored or rehabilitated. The simultaneous refilling of the mine is in progression with Mining. After the recovery of Heavy minerals, the reject sand is used for refilling the mined out area. As the back filling is integrated into the mining process, the excavated land will be subsequently reclaimed and the ground surface of the reclaimed land will be brought back to the contours matching with the surrounding topography. The reclamation will improve the overall landscape considerably in a phased manner by green belt development and ponds for water conservation and ground water recharge, to improve the water quality / quantity. It will also be a sustainable source for water, availing infiltration of water where ever feasible.

10) Post project monitoring system will be setup , which will ensure that the mitigation measures planned by way of environmental protection, function effectively during the entire period of mining and reclamation. These include periodic topography survey, Measures for coastal protection & it's monitoring, Water resource management, Socio economic development, Green belt development, Occupational health and biological monitoring and Radiation exposure monitoring. In addition to this, a separate Environmental Monitoring Committee (EMC) is recommended comprising senior officers, external experts and representative of the Alapad panchayat to ensure implementation of recommendations as per the EMP.

11) IREL has obtained surface rights over an area of about 600 cents along the 50 metre barrier of the canal. We have invested an amount of approx. Rs 9 Crore only for obtaining valuable strategic minerals. The land has to be return back to the owners after the completion of Mining, refilling as per R & R plan. If we are unable to do Mining, we will be in a position that we will not be able to comply with our commitment to Land owners and revenue authorities.

12) IREL has submitted undertaking to RO, MoEF&CC, Bangalore on 07.03.2019 to comply with specific conditions (iii) stipulated in EC issued by MoEF&CC, New Delhi for developing

green belt and mangroves after mining and refilling and restoring to its original topography of the area (buffer zone) along the canal.

Accordingly we are submitting the application for amendment in existing EC specific condition (iii) for the 50 metre buffer zone and allow us to Mine in area to its full extent along the canal and restoring to its original topography after Mining and re-filling. Amendment is sought keeping in view of conservation, development of atomic minerals which are not available outside CRZ area and restoring the topography without any change in flora and fauna of the area along canal and in line with National Mineral Policy 2019, Atomic Mineral Concession Rules, 32016, Mineral Conservation and Development Rules, 2017 and Mines and Minerals (Development and Regulation) Act, 1957.

We requested you to amend the specific condition (iii) in the existing EC at the earliest.

With kind regards,

Yours truly,
For IREL (India) Limited,

Chief General Manager & Head
एस. सूर्य कुमार S. SURYA KUMAR
मुख्य महा प्रबंधक एवं प्रधान
CHIEF GENERAL MANAGER & HEAD
आईआरईएल (इंडिया) लिमिटेड
IREL (INDIA) LIMITED ,CHAVARA
चवरा, कोल्लम KOLLAM - 691 583

Form-4

APPLICATION FOR AMENDMENT IN ENVIRONMENTAL CLEARANCE

(To be filled up by User Agency)

1. Details of Project

Proposal No. : IA/KL/MIN/124785/2019

(a) Name of the project : Mining of Beach sand minerals in Alappad Panmana and Ayaneivelikulangara villages , Kollam District

(b) Name of Company / Organisation. : IREL (India) Limited, Chavara

(c) Registered Address. : CHAVARA KOLLAM Kerala 691583

(d) Legal Status of the Company. : Central PSU

(e) Joint Venture (Yes/No) : No

2. Address for the Correspondence

(a) Name of Applicant. : S SURYAKUMAR

(b) Designation (Owner/Partner/CEO) : CGM

(c) Address :- IREL (INDIA) LIMITED CHAVARA KOLLAM

State : Kerala

District : Kollam

Town / Village : Alappad Panmana Ayaneivelikulangara

(d) Pin Code : 691583

(e) Email : cgm-ch@irel.co.in

(f) Telephone no : 2680701

(g) Fax no : 04762680141

(h) Mobile no : 9447142739

(i) Contact Person. : S

(j) Website (if any) : www.irel.co.in

3. Category of the Project/Activity as per Schedule of EIA Notification,2006

(a). Major Activity. : 1(a) Mining of minerals

Minor Activity : 1(a) Mining of minerals

Major Sub Activity. : No

Minor Sub Activity : No

(b). Category : A

Reason for applicant at central level/state level(in case of B1 and B2 projects): No

4. Location of Project

(a) Plot No/Survey No/Khasra No : 253to259,267,268,269,278,279,290,291,292,293,294,295,304,305,306,311 to 316,333 to 448 of Alappad village . Sy.No. 1 to 29 of Panmana village and Sy.No. 2140 to 2270,2330 to 2386, 2535 to 2569 and 2570 to 2682 of Ayaneivelikulangara villages

(b) Village : Alappad Panmana Ayaneivelikulangara

(c) Tehsil : Karunagappally

(d) District : Kollam

(e) State : Kerala

(f) Pin Code : 690518

(g) Bounded Latitudes (North) : Yes

From : Degree:9, Minutes : 0, Second :55.9692

To : Degree:9, Minutes : 2, Second :3.9678

(h) Bounded Longitudes (East) : Yes

From : Degree:76, Minutes : 30, Second :29.916

To : Degree:76, Minutes : 31, Second :17.184

(i) Survey of India Topo Sheet No : 58 C/12

5 Details of Environment Clearance

(a) Project Name : Mining of heavy minerals sand in Alappad , panmana and Ayaneivelikulangara villages in Kollam Dist., for an area of 180 Ha in NK IV EE of IREL(Indai) Limited, Chavara

(b) MoEF&CC / SEIAA File No : 11-36/2008-IA.III

(c) Date of issue of EC : 01/03/2011

(d) Uploaded EC letter (PDF Only):

6 Details of Consent to Operate

(i) Whether Consent to operate obtained (Yes/No) ? : Yes

(ii) Uploaded copies of all Consent to operate obtained since inception:

(iii)Date of issue : 13/04/2012

(iv)Valid Upto: 31/10/2014

(v)File No : PCB/HO/KLM/ICO/01/2012

(vi)Application No : 5559670

(vii)Uploaded copy of Consent to operate valid as on Date:

7 Amendment Sought for

Amendment in Configuration/ Amendments in Clearance condition/ Other (specify) : Amendment IN 6 Specific condition (iii) to Mine in buffer zone to its full extent along the canal k

8 Details of Product (as per the approved EC)

Details of Products				
S.no	**Product / Activity (Capacity/ Area).**	**Quantity**	**Unit**	**Mode of Transport/ Transmission of Product**
1	ROM	237150	TPA	ROAD

9 Details of Configuration (Multiple Entries Allowed)

Details of Configurations					
S.no	**Plant/ Equipment/ Facility**	**Existing Configuration**	**Proposed Configuration**	**Final configuration after amendment**	**Remarks if Any**
1	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE	NOT APPLICABLE

10 Reason for Amendment

Reason for Amendment : Amendment to Mine to its full extent along the canal keeping in view of conservation , development of Atomic minerals not available outside CRZ area and in line with National Mineral Policy 2019

11 Any Other amendment required

Any Other Amendment Required				
S.no	**Reference of Approved EC**	**Description as per Approved EC**	**Description as per Proposal.**	**Remarks**
1	11-36/2008-IA.III 6 Specific condition (iii)	50 meter all along the canal as Buffer zone	Amendment to Mine to its full extent along the can	reasons and detail mentioned in Covering letter

12 Details of EIA Consultant

Have you hired Consultant for preparing document (Yes/No) ? : Yes

(i) Accereditation No : NABET/EIA/RA075/243

(ii) Name of EIA Consultant : CSIR NIIST

(iii)Address : CSIR-NIIST , PAPPANAMCODE, THIRUVANATHAPURAM -695019

(iv)Mobile No: 9447206472

(v)Landline No : 0471251537

(vi)E-mail Id : ansar@niist.res.in

(vii)Category of Accreditation : A

(viii)Sector of Accreditation : NON COAL

(ix)Validity of Accreditation : 30.08.2019

(x)Uploaded certificate of Accreditation certified by QCI/NABET (Upload PDF Only):

13. Document to be Attached

(a) Uploaded addendum to EIA/EMP Report:

(b) Uploaded Copy of revised -Feasibility Report /Detailed Project Report (DPR) / Detailed Engineering Report / Detailed Conceptual Plan / Approved Mining Plan (in case of mining proposals):

(c) Upload Copy of final Layout Plan:

(d)Uploaded Cover Letter duly signed by the project proponent or authorized person:

(e)Uploaded a copy of authorization duly signed by the project proponent in support of the person making this application on behalf of the User Agency:

(f)Uploaded Additional File, If any:

14. Undertaking

(a): I hereby give undertaking that the data and information given in the application and enclosures are true to be best of my knowledge and belief and I am aware that if any part of the data and information found to be false or misleading at any stage, The project will be rejected and clearance given, If any to the project will be revoked at our risk and cost. In addition to above, I hereby give undertaking that no activity / construction / expansion has since been taken up.

(b)Name : S SURYAKUMAR

(c)Designation: CGM

(d)Company: IREL (India) Limited, Chavara

(e)Address: CHAVARA KOLLAM Kerala 691583