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EOGEPL/ CBM-RG (E)/ HSE/2022/4661

1st June 2023

The Regional Director
Ministry of Environment, Forests and Climate Change
Integrated Regional Office
IB-194, Sector III, Salt Lake
Kolkata-700106
West Bengal

Sub: Submission Six-monthly Compliance Report of the Environmental Clearance (Phase-III) by Essar Oil Gas Exploration and Production Limited (EOGEPL) reg.

Ref: ***Environmental Clearance of Phase-III vide F. No. J-11011/491/2011-IA II (I) dated 26th February, 2013 and amendment dated 9th May 2019.***

Dear Sir

We submit herewith the six-monthly compliance report for the period of October'22 to March'23, as stipulated conditions of prior environmental clearance vide F. No. J-11011/491/2011-IA II (I), dated 26th February, 2013 and amendment dated 9th May 2019 granted by its' ministry (MoEF&CC) to Essar Oil and Gas Exploration and Production Ltd., for the Production and Development Phase (Phase-III) of CBM project activities.

Thank you for your continued support

For Essar Oil and Gas Exploration and Production Limited

Warm Regards,

Essar Oil and Gas Exploration and Production Limited
Raniganj East CBM Project Durgapur

Vikram Goday
Vice President & Head- Facilities
Raniganj East, CBM Project-Durgapur

Enclosed: Annexure I, II, III, IV, V, VI, VII, VIII, IX

Copy to:

1. The Environmental Engineer, Durgapur Regional Office, WBPCB, Durgapur-713216

Essar Oil and Gas Exploration and Production Limited

RG (East)-CBM-2001/1 (Phase-III) Six-monthly Environment Clearance Compliance Report (October'22 to March' 23)

Ref: Environmental Clearance F.No.J-11011/491/2011-IA II (I), dated 26th February, 2013 and Amendment dated 9th May 2019

S. No	Condition	Compliance Status
A	**Specific Conditions**	
i.	Compliance to all the environmental conditions stipulated in the environmental clearance letter nos.J-11011/660/2007-IA-II(I) dated 6th May, 2008, J-11011/351/2009-IA-II(I) dated 23.09.2011 and its subsequent amendment shall be satisfactorily implemented.	Compliance to the environmental conditions stipulated in the environment clearance letter no. J-11011/351/2009-IA-II(I) dated 23.09.2011 and its' amendment dated 18th June 2012 are being satisfactorily implemented. The compliance report is regularly submitted to the Regional office of MoEF&CC.
ii.	Compensation for the land acquisition to the land oustees, if any, and also for standing crop shall be paid as per the National Resettlement and Rehabilitation Policy (NRRP) 2007 or State Government norms. It may be ensured that compensation provided shall not be less than the norms of the NRRP, 2007	Land acquisition is being conducted directly with the land owners and the compensation is paid as per the prevailing market rate. There are no involvement of Rehabilitation and Resettlement.
iii.	Prior permission from the Ministry of Defence shall be obtained regarding impact of proposed plant on Panagarh, if any.	3 (Three) Gas Gathering Station (GGS) and 1 (One) Main Compressor Station (MCS) have been installed as per the condition of the NOC of Ministry of Defense (MoD). GGS 4 is not in Operation.
iv.	As proposed, no forest land shall be used for the proposed facilities	No forest land is used for the construction of well pads and installation of surface facilities at project area.
v.	Ambient Air Quality shall be monitored near the closest human settlements as per the National Ambient Air Quality Emission Standards (NAAQES) issued by the Ministry vide G.S.R No. 826(E) dated 16th November, 2009 for PM10, PM2.5, SO2, NOx, CO, CH4, VOCs, HC, Non-Methane HC etc. Efforts shall be made to	Ambient Air Quality (AAQ) Monitoring being carried out with a NABL accredited laboratory at well sites near to the closest human settlements as per the Ambient Air Quality Emission Standards (NAAQES) issued by the Ministry vide G.S.R No. 826(E) dated 16th November, 2009 for PM10, PM2.5, SO2, NOX, CO, CH4, VOCs, HC, Non-methane HC.

S. No	Condition	Compliance Status
	improve the ambient air quality of the area.	AAQ monitoring results of last six months, i.e. October'22 to March'23 refer to **Annexure I.**
vi.	Mercury shall also be analysed in air, water and drill cuttings twice during drilling period	Mercury is being analysed in produced water, ambient air and drill cuttings, where Mercury level is in below detection of specified limits. The analysis results of Air **(**refer to ***Annexure I***), Water (refer to **Annexure *II)*** and drill cuttings (refer to ***Annexure III***).
vii.	The flare system shall be designed as per good oil field practices and Oil Industry Safety Directorate (OISD) guidelines. The company shall take necessary measures to prevent fire hazards and soil remediation as needed. At the place of ground flaring, the flare pit shall be lined with refractory bricks and efficient burning system. In case of overhead flare stacks, the stack height shall be provided as per the regulatory requirements and emission from stacks shall meet the MoEF/CPCB guidelines.	The overhead flaring system has been installed as per OISD guidelines. The flare stack height is 30 m. for GGS and 50 m. for MCS. The measures delineated in the EIA/EMP are being maintained to prevent fire hazards. The following measures have been implemented. • Installation of electrical equipment as per approved hazardous zone classification as communicated to DGMS. • Major facilities like GGS, MCS, Warehouse etc. are well equipped with Fire hydrant system. • Dry chemical fire extinguishers are available at site. • Online methane gas analyzers (CH4) are available. • Flame proof type lighting fixtures, push buttons and switches at the drill site facilities are used.
viii.	The company shall make the arrangement for control of noise from the drilling activity, compressor station and DG sets by providing necessary mitigation measures such as proper acoustic enclosures to DG sets and meet the norms notified by the MoEF. Height of all the stacks/vents shall be as per the CPCB guidelines.	CPCB approved models of silent generator sets are installed which are incorporated with acoustic enclosure. Once the gas production starts at the well site, the Diesel Generator (DG) sets are replaced with Gas Generator (GG) sets. In production well sites Gas Generator sets are operational. Regular noise monitoring is carried out in the activity area and surrounding habitat. The results of noise monitoring refer to **Annexure IV**.
ix.	The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation	Drill cuttings and drilling fluids are collected in HDPE lined pit at site. Thereafter, at treatment site, it is stored in RCC pit for further treatment through Drilling Waste Processing Plant. We are in compliance with

S. No	Condition	Compliance Status
	notified vide GSR.546€ dated 30th August, 2005.	the guidelines, for the disposal of solid waste, drill cuttings and drilling fluids for onshore drilling operation notified vide GSR.546 (E) dated 30th August, 2005.
x.	Total fresh water requirement should not exceed 125m3 for each well during drilling phase 1 m3/day for GGS/MCS. Prior permission shall be obtained from the Competent Authority and a copy submitted to the Ministry's Regional Office at Bhubaneswar	RO treated produced water is recycled/ reused for drilling, HF, work over and other activities. Ground water is not withdrawn for Industrial operation.
xi.	During well drilling, wastewater should be segregated into waste drilling fluid and drill cuttings. Drill cutting should be stored onsite impervious HDPE lined pit for solar evaporation and drying. Effluent should be properly treated and treated effluent should conform to CPCB standards. As proposed, produced water should be treated by reverse osmosis and reuse in drilling of new wells, fire hydrant system and other beneficial purposes. Domestic effluent should be disposed-off through septic tank followed by soak pit.	Drilling waste processing plant has been installed and operational where drilling fluid and drill cutting are segregated and treated. Drill cutting is collected in onsite impervious HDPE lined pit, thereafter at treatment site, it is stored in RCC pit for further treatment through drilling waste processing plant, where treated effluent is conforming to CPCB standards. . Produced water is treated through Reverse Osmosis (RO) system and reused for drilling, HF, work over, fire hydrant and other beneficial purposes. RO water analysis results attached with this report as **Annexure V.** Domestic effluent is disposed of through septic tank to soak pit.
xii.	Ground water quality monitoring should be done to assess if produced water storage or disposal has any effect.	The ground water monitoring carried out in Post-monsoon (November'22). The Ground water analysis results refer to **Annexure VI**.
xiii.	Drilling wastewater including drill cuttings, wash water shall be collected in disposal pit lined with HDPE lining, evaporated or treated and shall comply with the notified standards for on-shore disposal on land. Proper toxicological analysis shall be done to ensure there is no hazardous material. Copy of toxicological analysis shall be submitted to Ministry's Regional Office at	Drill cutting including wash water is collected onsite impervious HDPE lined pit. Thereafter at treatment site, it is stored in RCC pit for further treatment through drilling waste processing plant, where treated effluent is conforming to notified standards for onshore disposal. The analysis result of drill cutting refer to **Annexure III** reveals that all tested parameters are well within

S. No	Condition	Compliance Status
	Bhubaneswar.	the permissible limit.
xiv.	Water base drilling mud or synthetic based mud shall be used	Water based mud is used for drilling.
xv.	The company shall take necessary measures to prevent fire hazards, containing oil spill and soil remediation as needed. At place of ground flaring, the overhead flaring stack with knockout drums shall be installed to minimize gaseous emissions during operation.	The necessary preventive measures are in place to prevent fire hazards, oil spill and soil remediation as follows. • Installation of electrical equipment as per approved hazardous zone classification as communicated to DGMS. • Major facilities like GGS, MCS, Ware House etc. are well equipped with fire hydrant system • Dry chemical fire extinguishers are available at all well site. • Portable methane gas analysers (CH4) are available. • Gas detectors & sensors are in place and operational. • Flame proof type lighting fixtures, push buttons and switches in the drill site facilities are used. • Impervious surface, secondary containment and spill kits are provided whenever there is a possibility of soil contamination. The overhead flaring stack with knockout drums has been installed to minimize gaseous emissions during operation.
xvi.	The company shall take necessary measures to prevent fire hazards and soil remediation as needed. The stacks of adequate height shall be provided to flare the gas, if required, to minimize gaseous emissions and heat load during flaring	The necessary preventive measures are in place to prevent fire hazards, oil spill and soil remediation as follows. • Installation of electrical equipment as per approved hazardous zone classification as communicated to DGMS. • Major facilities like GGS, MCS, Ware House etc. are well equipped with fire hydrant system • Dry chemical fire extinguishers are available at all well site. • Portable methane gas analysers (CH4) are

S. No	Condition	Compliance Status
		available. • Gas detectors & sensors are in place and operational. • Flame proof type lighting fixtures, push buttons and switches in the drill site facilities are used. • Impervious surface, secondary containment and spill kits are provided whenever there is a possibility of soil contamination. The overhead flaring stack with adequate height of 30 m. for GGS and 50 m. for MCS are provided to flare the gas. Though we achieved < 0.5% flaring as technical flaring for the period of Oct.'22 to March'23.
xvii.	To prevent underground coal fire, preventive measures shall be taken for ingress of ambient air during withdrawal inside the coal seams by adopting technologies including vacuum suction. Gas detectors for the detection of CH4 and H2S shall be provided.	Gas detectors for Methane, H2S and other gases are provided at the Gas Gathering Station and production sites. There is no chance of ambient air ingress, as the well is arrested with drive head and progressive cavity pump.
xviii.	The design, material of construction, assembly, inspection, testing and safety aspects of operations and maintenance of pipeline and transporting the natural gas/oil shall be governed by ASME/ANSI B 31.8/B31.4 and OISD standard 141. Pipeline wall thickness and minimum depth of burial at river crossing and casings at rails, major road crossings should be in conformity with ANSI/ASME requirements.	All the surface facilities and pipelines have been installed as per the ASME/ANSI B 31.8 and OISD standards.
xix.	The company shall develop a contingency plan for H2S release including all necessary aspects from evacuation to resumption of normal operations. The workers shall be provided with personal H2S detectors in locations of high risk of exposure along with self-containing breathing apparatus.	H_2S is not present as per the analysis of gas tapped from the wells. However all the necessary safety measures are delineated as per the emergency response plan Gas detectors are kept at the drilling and production sites to check the presence of gases in the work zone. All workforce are ensured with the standard PPEs according to the job requirement. Self-contained breathing apparatus is in place as per the requirement.

S. No	Condition	Compliance Status
xx.	Adequate well protection system shall be provided like Blow Out Preventer (BOP) or diverter systems as required based on the geological formation of the blocks.	CBM well hydrostatic pressures are normally less than 2psi. However considering the hydrostatic pressures and sensitivity of well, Blow Out Preventers or Diverter systems are adopted at the well head during drilling. Along with other well control measures is ensured, such as proper pre-well planning and drilling fluid logging to maintain the hydrostatic pressure.
xxi.	The top soil removed shall be stacked separately for reuse during restoration process.	The top soil is spreaded over the designated area for green belt development at the project's facilities.
xxii.	Emergency Response Plan shall be based on the guidelines prepared by OISD, DGMS and Govt. of India. Recommendations mentioned in the Risk Assessment & Consequence Analysis and Disaster Management Plan shall be strictly followed.	Emergency Response & Disaster Management Plan has been prepared as per the OISD & DGMS guidelines. Recommendations mentioned in risk assessment & consequence analysis are being duly implemented.
xxiii.	Project proponent shall comply with the environment protection measures and safeguards recommended in the EIA/EMP/risk analysis report/disaster management plan	Environmental protection measures and safeguards recommended in EMP / Risk Analysis / Disaster Management Plan are being implemented and maintained.
xxiv.	The company shall take measures after completion of drilling process by well plugging and secured enclosures, decommissioning of rig upon abandonment of the well and drilling site shall be restored in original condition. In the event that no economic quantity of hydrocarbon is found a full abandonment shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.	Well will be abandoned and restore to natural position if found unsuitable for hydrocarbon extraction. Well will be fully abandoned in compliance with Indian Petroleum Regulations in the event of no economic quality of hydrocarbon is found.
xxv.	Occupational health surveillance of the workers shall be carried out as per the prevailing Acts and Rules.	All employees have undergone pre-employment medical examination. Periodical occupational health surveillance is conducted as per the approved schedule of Directorate- General of Mine Safety (DGMS).

S. No	Condition	Compliance Status
xxvi.	Company shall adopt Corporate Environment Policy as per the Ministry's O.M.No.J-11013/41/2006-IA.II(I) dated 26th April, 2011 and implemented.	Company has framed Corporate Environment Policy which is duly implemented.
xxvii	All the commitments made to the public during the Public Hearing/Public Consultation meeting held on 24th May, 2012 shall be satisfactorily implemented and a separate budget for implementing the same shall be allocated and information submitted to the Ministry's Regional Office at Bhubaneswar.	Commitments given in the public hearing are being implemented. A separate budget has already been allocated for the FY 2022-2023 for the welfare of surrounding villages in thrust areas like Health, Education & Empowerment etc. under CSR activities.
xxvii	At least 5% of the total cost of the project should be earmarked towards the enterprise social commitment and item-wise details along with time bound action plan shall be prepared and submitted to the Ministry's Regional Office at Bhubaneswar. Implementation of such program shall be ensured after the completion of the project.	The expenditure towards enterprise social commitment refer to **Annexure VII.** The budgetary allocation has been made for the FY 2022-23 for the CBM Project which is about INR 17 lakh. The fund is being utilized judicially for the development of villages and people in the vicinity of the project area.
B	**General Conditions**	
i.	The project authorities must strictly adhere to the stipulations made by the State Pollution Control Board (SPCB), State Government and any other statutory authority.	We are in compliance to the stipulations made by the State Pollution Control Board (SPCB), State Government and statutory bodies.
ii.	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any.	For any further expansion and modification in project configuration, we would approach to MoEF&CC for the prior Environmental Clearance.
iii.	The project authorities must strictly comply with	We comply the rules and regulations under

S. No	Condition	Compliance Status
	the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.	Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. We are in compliance of OMR- 2017 and OISD guidelines of Directorate- General of Mine Safety (DGMS) for CBM operation and PESO approval obtained wherever applicable.
iv.	The project authorities must strictly comply with the rules and regulation with regarding to handling and disposal of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008 wherever applicable. Authorization from the State Pollution Control Board must be obtained for collections/treatment/storage/ disposal of hazardous wastes.	We are in compliance with the rules and regulations regarding to handling and disposal of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. Authorization from the West Bengal Pollution Control Board has been obtained and valid till October- 2023. The copy of the same was already enclosed along with the earlier six-monthly compliance report.
v.	The overall noise levels in and around the plant area shall be kept within the standards by providing noise control measures including acoustic hoods, silencers, enclosures etc. on all sources of noise generation. The ambient noise levels shall conform to the standards prescribed under EPA Rules, 1989 viz. 75dBA (daytime) and 70 dBA (night time)	CPCB approved models of silent generator sets are in used which are incorporated with acoustic enclosure conforming to the specified limit. Regular noise monitoring is being carried out at the activity area and surrounding habitat. The results of noise monitoring refer to **Annexure IV**.
vi.	A separate Environmental Management Cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	A dedicated environment management cell is functional for implementing the environment management plan at large. We conduct environmental monitoring by M/s Scientific Research laboratory, Kolkata (MoEF&CC recognized and NABL accredited).
vii.	As proposed, Rs.2.80 Crore earmarked for environment pollution control measures shall be used to implement the conditions	Proposed Rs.2.80 Crore earmarked for environment pollution control measures is being utilized judiciously. The expenditure towards environmental activities for the period of October'22 to March'23 refer to **Annexure VIII**.
viii.	The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control	We always endeavour in coordination with the Regional office of this Ministry/Central Pollution

S. No	Condition	Compliance Status
	Board will monitor the stipulated conditions. A six monthly compliance report and the monitored data along with statistical interpretation shall be submitted to them regularly.	Control Board/State Pollution Control Board for monitoring the stipulated conditions. We submit six monthly compliance report along with monitoring data regularly.
ix.	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, Zila Parishad/ Municipal Corporation, Urban Local Body and the local NGO, if any, from whom suggestions/ representations, if any, were received while processing the proposal. The clearance letter shall also be put on the web site of the company by the proponent.	A copy of Clearance letter has been uploaded on the company's website. The notice of obtaining environmental clearance has been published two newspapers. Also a copy of clearance has been circulated to major administrative offices.
x.	The project proponent shall upload the status of compliance for the stipulated environment 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 MoEF, the respective Zonal Office of CPCB and the WBPCB. The criteria pollutant levels namely; PM10, PM2.5, SO2, NOx, HC (Methane & Non-methane), VOCs (ambient levels as well as stack emissions) or critical sectoral parameters, indicated for the projects shall be monitored and displayed at a convenient location near the main gate of the company in the public domain.	The compliance report of environment clearance conditions including results of monitoring data is being uploaded on company's website periodically. It also sent to the Regional Offices of MOEF&CC and WBPCB at regular basis. The ambient air quality monitoring is carried out as per the NAAQS. The criteria pollutant levels namely; SPM, RSPM, SO_2, NOx, HC (Methane & Non-methane), VOCs (ambient levels as well as stack emissions) are monitored periodically and displayed at the main entrance of the Gas Gathering Station. The AAQ monitoring results refer to **Annexure I.** The stack emissions results refer to **Annexure IX.**
xi.	The project proponent shall also submit six monthly reports on the status of the compliance of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MoEF, the respective Zonal Office of CPCB and the WBPCB. The Regional Office of this Ministry/CPCB/WBPCB shall monitor the stipulated conditions.	We submit six-monthly compliance reports on the status of the compliance of stipulated environmental conditions including results of environmental monitoring (both in hard copies and through e-mail) to the Regional Office of MoEF&CC and the respective Zonal Office of WBPCB.
xii.	The environmental statement for each financial year ending 31st March in Form-V as is	The environmental statement for the financial year (FY 2021-22) ending 31st March 2022 in Form-V has

S. No	Condition	Compliance Status
	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 conditions and shall also be sent to the respective Regional Offices of the MoEF by e-mail	been submitted to West Bengal Pollution Control Board and the same has been uploaded on the company's website. The copy of the environment statement (Form V) for the FY 2021-22 already submitted to Integrated Regional Office (IRO), Kolkata of MoEF&CC alongwith the last six monthly compliance report (April'22 to September'22).
xiii.	The Project Proponent shall inform the public that the project has been accorded environmental clearance by the Ministry and copies of the clearance letter are available with the WBPCB and may also be seen at Website of the Ministry of Environment and Forests at http:/envfor.nic.in. This shall be advertised within seven days from the date of issue of the clearance letter, at least in two local newspapers that are widely circulated in the region of which one shall be in the vernacular language of the locality concerned and a copy of the same shall be forwarded to the Regional Office.	The advertisement regarding the grant of environmental clearance has been published in two newspapers viz The Statesman (English) and Anandabazar Patrika (Bengali/Vernacular) on 28th February, 2013. A copy of the advertisement has already submitted along with six-monthly compliance report for the period of Oct' 12 – Mar' 13.
xiv.	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial closure and final approval of the project by the concerned authorities and the date of commencing the land development work.	We have taken approval from concerned authorities by submitting Field Development Plan and Annual/ Revised Budget.

Note:

i) With refer to Environmental Clearance Amendment vide **F.No.J-11011/491/2011-IA- II (I), dated 9th May, 2019,** shale gas exploration activities not started yet.

ii) EAC, Industry- 2, recommended for an extended validity of above mentioned EC for one more year, till **25th February, 2024**.

ANNEXURE I

Name of Location			MCS						GGS- 01					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	17.66	27.74	40.85	48.51	46.14	44.22	22.50	34.23	38.94	47.88	45.91	44.36
PM 10	$\mu g/m^3$	100	46.30	69.42	73.13	90.92	86.54	90.52	51.64	80.46	76.62	89.97	82.61	75.49
Nitrogen Dioxide	$\mu g/m^3$	80	28.22	25.62	24.81	25.57	25.43	24.35	25.83	24.23	26.34	24.15	25.33	24.71
Sulphur Dioxide	$\mu g/m^3$	80	4.38	4.27	4.75	4.60	5.12	4.90	4.48	4.61	4.94	4.79	5.12	4.45
Carbon Monoxide	mg/m^3	2	0.354	0.396	0.432	0.438	0.468	0.472	0.328	0.394	0.432	0.462	0.464	0.438
Hydrocarbon	mg/m^3	NIL	1.27	1.21	1.13	1.70	1.49	1.58	1.44	1.58	1.24	1.65	1.63	1.38
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			2.34			2.99			2.98			3.08	
Benzo(a)Pyrene	ng/m^3	1		0.29			0.36			0.44			0.44	
Ammonia	$\mu g/m^3$	400		24.84			28.34			31.28			31.23	
Ozone	$\mu g/m^3$	180		35.07			38.91			42.19			41.27	
Lead	$\mu g/m^3$	1		0.08			0.12			0.16			0.15	
Nickel	ng/m^3	20		8.02			10.49			13.17			11.62	
Arsenic	ng/m^3	6		1.15			1.44			1.56			1.53	
Benzene	$\mu g/m^3$	5		1.27			1.73			1.67			1.84	

Name of Location			GGS- 02						PARULIA					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	18.02	34.44	53.39	48.31	43.61	49.76	20.66	31.17	43.65	43.52	45.40	47.12
PM 10	$\mu g/m^3$	100	49.07	82.10	90.19	88.21	81.57	81.51	48.81	76.65	73.58	85.37	79.92	92.76
Nitrogen Dioxide	$\mu g/m^3$	80	27.95	25.52	26.40	25.20	24.75	24.77	26.88	24.68	26.49	24.58	25.19	23.50
Sulphur Dioxide	$\mu g/m^3$	80	4.47	4.53	4.67	4.53	4.98	4.99	4.84	4.47	4.78	4.82	4.97	4.55
Carbon Monoxide	mg/m^3	2	0.344	0.392	0.412	0.452	0.458	0.466	0.332	0.398	0.436	0.442	0.457	0.442
Hydrocarbon	mg/m^3	NIL	1.39	1.67	1.69	1.58	1.78	1.89	1.34	1.46	1.19	1.45	1.47	1.65
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			3.12			3.36			2.72			2.95	
Benzo(a)Pyrene	ng/m^3	1		0.48			0.49			0.34			0.34	
Ammonia	$\mu g/m^3$	400		32.41			33.05			29.12			27.13	
Ozone	$\mu g/m^3$	180		44.29			44.78			40.14			38.04	
Lead	$\mu g/m^3$	1		0.20			0.19			0.11			0.11	
Nickel	ng/m^3	20		14.77			13.39			11.98			10.08	
Arsenic	ng/m^3	6		1.65			1.71			1.37			1.40	
Benzene	$\mu g/m^3$	5		1.72			1.98			1.55			1.68	

Name of Location			SARASWATIGUNJ						PRATPPUR					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	21.76	35.94	48.29	47.55	46.05	49.40	26.89	30.14	42.98	44.61	46.08	39.17
PM 10	$\mu g/m^3$	100	63.98	74.20	82.69	91.31	84.47	89.73	64.73	77.22	79.51	85.06	81.85	79.71
Nitrogen Dioxide	$\mu g/m^3$	80	27.69	26.69	26.68	25.75	26.86	25.90	26.01	26.48	26.16	24.25	25.22	23.69
Sulphur Dioxide	$\mu g/m^3$	80	4.17	4.36	4.72	5.05	4.98	4.81	4.42	4.32	4.70	4.73	5.10	4.64
Carbon Monoxide	mg/m^3	2	0.414	0.374	0.408	0.428	0.452	0.438	0.378	0.394	0.408	0.432	0.452	0.458
Hydrocarbon	mg/m^3	NIL	1.48	1.40	1.35	1.74	1.27	2.02	1.46	1.49	1.3	1.42	1.59	1.41
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			2.63			2.68			2.81			3.05	
Benzo(a)Pyrene	ng/m^3	1		0.37			0.27			0.41			0.42	
Ammonia	$\mu g/m^3$	400		28.12			23.72			30.46			30.69	
Ozone	$\mu g/m^3$	180		38.53			33.62			41.57			40.81	
Lead	$\mu g/m^3$	1		0.15			0.07			0.13			0.14	
Nickel	ng/m^3	20		11.59			7.84			12.08			11.29	
Arsenic	ng/m^3	6		1.30			1.12			1.41			1.49	
Benzene	$\mu g/m^3$	5		1.48			1.43			1.59			1.81	

Name of Location			BANSIA						JAMGORA					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	28.58	31.41	46.62	44.24	43.57	43.79	29.90	31.12	48.06	42.91	46.18	45.06
PM 10	$\mu g/m^3$	100	66.64	75.75	83.19	80.53	72.67	83.85	69.91	78.96	86.85	82.28	79.29	89.08
Nitrogen Dioxide	$\mu g/m^3$	80	26.35	24.49	25.96	23.83	25.53	24.85	26.24	26.78	25.94	25.39	26.51	24.53
Sulphur Dioxide	$\mu g/m^3$	80	4.08	4.17	4.97	4.77	4.98	4.77	4.46	4.64	4.58	4.64	5.12	4.65
Carbon Monoxide	mg/m^3	2	0.388	0.404	0.442	0.458	0.469	0.462	0.388	0.384	0.430	0.428	0.448	0.436
Hydrocarbon	mg/m^3	NIL	1.51	1.42	1.44	1.12	1.56	1.47	1.64	1.51	1.55	1.27	1.38	1.54
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			2.67			3.03			2.77			2.88	
Benzo(a)Pyrene	ng/m^3	1		0.38			0.40			0.40			0.31	
Ammonia	$\mu g/m^3$	400		28.69			30.18			29.73			25.84	
Ozone	$\mu g/m^3$	180		39.18			40.08			41.94			36.42	
Lead	$\mu g/m^3$	1		0.10			0.14			0.18			0.09	
Nickel	ng/m^3	20		11.84			11.05			12.29			9.61	
Arsenic	ng/m^3	6		1.31			1.51			1.47			1.32	
Benzene	$\mu g/m^3$	5		1.51			1.78			1.56			1.61	

Name of Location			KULDIHA						JATGORIA					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	26.85	31.62	47.21	46.26	47.77	45.85	27.15	32.38	45.75	44.91	44.63	48.34
PM 10	$\mu g/m^3$	100	60.43	72.19	80.23	89.92	89.91	83.76	65.06	80.77	72.68	93.59	80.37	78.20
Nitrogen Dioxide	$\mu g/m^3$	80	28.08	26.61	27.56	25.83	26.54	25.79	26.46	25.51	28.19	25.27	25.34	26.23
Sulphur Dioxide	$\mu g/m^3$	80	4.31	4.52	4.68	4.72	5.12	4.98	4.36	4.52	5.03	4.85	5.00	5.17
Carbon Monoxide	mg/m^3	2	0.398	0.388	0.422	0.438	0.438	0.442	0.402	0.402	0.422	0.456	0.472	0.472
Hydrocarbon	mg/m^3	NIL	1.41	1.37	1.28	1.62	1.35	1.76	1.55	1.63	1.08	1.77	1.55	1.81
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			2.7			2.83			3.04			3.02	
Benzo(a)Pyrene	ng/m^3	1		0.32			0.30			0.46			0.39	
Ammonia	$\mu g/m^3$	400		26.17			25.18			31.73			29.52	
Ozone	$\mu g/m^3$	180		37.09			35.37			43.48			39.87	
Lead	$\mu g/m^3$	1		0.10			0.09			0.15			0.13	
Nickel	ng/m^3	20		10.17			9.02			13.48			10.64	
Arsenic	ng/m^3	6		1.26			1.23			1.59			1.48	
Benzene	$\mu g/m^3$	5		1.42			1.56			1.70			1.76	

Name of Location			Gopalpur Warehouse						KANTABERIA					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	27.24	29.41	52.34	49.91	42.28	50.08	28.63	29.34	49.30	46.69	48.89	40.31
PM 10	$\mu g/m^3$	100	63.79	71.83	86.58	96.01	85.64	85.32	65.79	73.67	85.55	80.91	84.98	65.48
Nitrogen Dioxide	$\mu g/m^3$	80	27.90	25.69	25.93	23.97	25.15	24.13	27.14	26.46	27.74	25.39	23.90	23.70
Sulphur Dioxide	$\mu g/m^3$	80	4.51	4.51	4.63	4.93	5.22	5.01	4.38	4.76	4.91	4.57	5.05	4.32
Carbon Monoxide	mg/m^3	2	0.408	0.368	0.416	0.428	0.465	0.462	0.386	0.388	0.416	0.446	0.458	0.442
Hydrocarbon	mg/m^3	NIL	1.45	1.34	1.47	1.86	1.72	2.14	1.59	1.38	1.51	1.18	1.32	1.23
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			2.6			3.27			2.58			2.71	
Benzo(a)Pyrene	ng/m^3	1		0.30			0.46			0.33			0.29	
Ammonia	$\mu g/m^3$	400		25.59			32.61			27.44			24.37	
Ozone	$\mu g/m^3$	180		36.24			43.54			37.94			34.28	
Lead	$\mu g/m^3$	1		0.11			0.17			0.09			0.08	
Nickel	ng/m^3	20		9.84			12.68			11.27			8.36	
Arsenic	ng/m^3	6		1.22			1.63			1.33			1.17	
Benzene	$\mu g/m^3$	5		1.39			1.94			1.36			1.48	

Name of Location			NACHAN						SARENGA					
Month			Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23	Oct'22	Nov'22	Dec'22	Jan'23	Feb'23	Mar'23
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	23.01	31.06	48.42	43.83	47.96	49.28	25.58	34.14	42.90	45.42	43.85	44.6
PM 10	$\mu g/m^3$	100	62.77	79.91	83.81	83.41	88.19	92.66	63.47	73.84	80.69	93.92	73.42	81.38
Nitrogen Dioxide	$\mu g/m^3$	80	26.46	25.60	25.27	26.09	24.31	26.24	26.23	23.80	25.41	24.30	23.32	25.63
Sulphur Dioxide	$\mu g/m^3$	80	4.23	4.44	4.79	4.74	5.15	5.03	4.06	4.06	4.90	4.89	5.16	4.76
Carbon Monoxide	mg/m^3	2	0.368	0.372	0.418	0.452	0.462	0.458	0.396	0.392	0.422	0.438	0.475	0.468
Hydrocarbon	mg/m^3	NIL	1.42	1.55	1.41	1.34	1.67	1.85	1.4	1.35	1.33	1.81	1.52	1.69
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			2.81			3.12			2.62			2.97	
Benzo(a)Pyrene	ng/m^3	1		0.42			0.45			0.36			0.37	
Ammonia	$\mu g/m^3$	400		30.56			32.17			27.82			29.04	
Ozone	$\mu g/m^3$	180		42.63			42.16			38.07			39.53	
Lead	$\mu g/m^3$	1		0.21			0.16			0.09			0.13	
Nickel	ng/m^3	20		12.64			11.93			10.96			10.82	
Arsenic	ng/m^3	6		1.54			1.56			1.28			1.46	
Benzene	$\mu g/m^3$	5		1.63			1.87			1.40			1.75	

ANNEXURE II

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Period: Oct.'22 - Mar.'23)

ANNEXURE II

MONTH				Oct.'22									
S. No.	Parameter	Unit	Onshore Discharge Standards	EDG-074-D1 (PARULIA)	EDC-072-D7 (PARULIA)	EDC-409-D3 (PRATAPPUR)	EDD-053-V1 (NACHAN)	EDD-049-D1 (PRATAPPUR)	EDD-429-D2 (JAMGORA)	EDD-015-D4 (BARGORIA)	EDD-003-D6 (BARGORIA)	EDD-026-D4 (KANTABERIA)	EDP-044-D1 (AKANDARA)
1	pH		5.5-9.0	7.86	7.30	7.54	7.57	7.83	7.44	7.52	7.78	7.30	7.79
2	Temperature	deg. C	40 deg. C	31.7°C	36.4°C	35.4°C	37.4°C	35.3°C	37.2°C	37.9°C	37.9°C	34.5°C	33.6°C
3	Suspended Solids	mg/l	100	10	6	24	5	<2	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	2100	2274	2856	2436	3346	2538	762	2456	2398	1192	922
5	Chlorides	mg/l	600	384	510	285	625	375	88	245	155	425	455
6	Sulphates	mg/l	1000	5.1	6.3	4.7	5.5	4.8	3.90	4.1	5	5.6	3.8
7	BOD, 3 Days at 27ºC	mg/l	30	<2	<2	11	4	<2	<2	<2	<2	<2	<2
8	COD	mg/l	100	8.0	<8	35.0	18.0	<8	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	<5.0	<5.0	10	7	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	0.73	0.91	0.62	1.35	0.88	0.45	0.71	0.98	0.62	0.28
13	Total Chromium	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	0.019	0.027	0.024	0.016	0.031	<0.01	0.022	0.017	0.013	<0.01
15	Copper	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Period: Oct.'22 - Mar.'23)

ANNEXURE II

MONTH				Nov.'22									
S. No.	Parameter	Unit	Onshore Discharge Standards	EDI-030-D3 (AKANDARA)	EDE-018-D1 (JATGORIA)	EDD-23-D1 (GOPEDANGA)	EDD-22-D1 (GOPEDANGA)	EDD-22-D2 (GOPEDANGA)	EDD-22-D3 (GOPEDANGA)	EDD-004-V1 (BARGORIA)	EDD-401-D1 (KHATGORIA)	EDD-007-D1 (GOPEDANGA)	EDD-405-D3 (KALIKAPUR)
1	pH		5.5-9.0	7.15	7.50	7.93	7.10	7.31	7.35	7.26	8.10	7.79	7.51
2	Temperature	deg. C	40 deg. C	31.3°C	31.7°C	33.2°C	31.9°C	35.1°C	35.5°C	30.2°C	30.7°C	28.5°C	34.5°C
3	Suspended Solids	mg/l	100	8	3	4	<2	<2	6	8	<2	<2	4
4	Total Dissolved Solids	mg/l	2100	1456	2784	1982	1688	2080	1608	2574	1360	1896	1774
5	Chlorides	mg/l	600	275	590	209	196	260	210	575	315	463	390
6	Sulphates	mg/l	1000	4.3	6.2	5.2	5.9	6.20	4.5	3.8	3.7	4.2	4.80
7	BOD, 3 Days at 27ºC	mg/l	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
8	COD	mg/l	100	<8	<8	9.0	<8	<8	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	<5.0	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	0.69	1.35	0.83	1.1	1.65	2.1	1.63	0.6	0.83	1.15
13	Total Chromium	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	0.012	0.033	0.023	0.012	0.028	0.012	0.021	0.017	0.013	0.022
15	Copper	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
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ANNEXURE II

MONTH				Dec.'22									
S. No.	Parameter	Unit	Onshore Discharge Standards	EDH-044-D1 (AKANDARA)	EDD-407-D1 (JAMGORIA)	EDC-411-D1 (BANSIA)	EDD-406-D2 (JAMGORA)	EDD-406-D3 (JAMGORA)	EDD-429-D1 (JAMGORA)	EDD-429-D2 (JAMGORA)	EDG-074-D2 (PARULIA)	EDG-077-D5 (KAMALPUR)	EDD-052-D5 (PRATAPPUR)
1	pH		5.5-9.0	7.95	8.47	8.45	8.39	8.42	8.37	8.36	8.40	8.55	8.59
2	Temperature	deg. C	40 deg. C	31.2°C	30.4°C	28.9°C	30.3°C	34.2°C	32.9°C	36.4°C	33.3°C	34.8°C	35.1°C
3	Suspended Solids	mg/l	100	<2	<2	<2	<2	2	<2	<2	<2	<2	3
4	Total Dissolved Solids	mg/l	2100	994	1576	1836	904	992	1152	882	2840	2762	3228
5	Chlorides	mg/l	600	490	415	460	245	260	340	210	545	865	770
6	Sulphates	mg/l	1000	<2.5	4.2	5	<2.5	4.3	3.1	<2.5	6.4	5.8	7.00
7	BOD, 3 Days at 27ºC	mg/l	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
8	COD	mg/l	100	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	<5.0	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	0.75	0.69	0.85	0.58	1.1	0.79	0.45	1.9	1.4	1.62
13	Total Chromium	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	0.015	0.014	0.02	<0.01	0.015	0.011	<0.01	0.019	0.022	0.027
15	Copper	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Period: Oct.'22 - Mar.'23)

ANNEXURE II

MONTH				Jan.'23									
S. No.	Parameter	Unit	Onshore Discharge Standards	EDD-022-D1 (GOPEDANGA)	EDD-022-D3 (GOPEDANGA)	EDD-003-D6 (BARGORIA)	EDN-184-D2 (GOPALPUR)	EDD-026-D4 (KANTABERIA)	EDD-054-D2 (NACHAN)	EDG-075-D1 (PARULIA)	EDG-075-D3 (PARULIA)	EDG-077-D3 (KAMALPUR)
1	pH		5.5-9.0	8.50	8.53	8.64	7.9	7.82	8.49	8.42	8.39	8.51
2	Temperature	deg. C	40 deg. C	32.1°C	31.4°C	29.1°C	24.9°C	33.2°C	31.5°C	31.7°C	32.6°C	30.4°C
3	Suspended Solids	mg/l	100	<2	<2	<2	<2	<2	2	<2	5	<2
4	Total Dissolved Solids	mg/l	2100	1758	1912	2670	1232	1276	3882	1816	592	1672
5	Chlorides	mg/l	600	430	590	890	585	536	1020	390	110	575
6	Sulphates	mg/l	1000	6.0	8.6	9.20	7.5	6.2	8.8	5.3	4.10	7.20
7	BOD, 3 Days at 27ºC	mg/l	30	<2	<2	<2	<2	<2	<2	<2	<2	<2
8	COD	mg/l	100	<8	<8	<8	<8	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	<5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	0.58	0.39	0.28	0.49	0.58	2.05	1.9	0.81	0.42
13	Total Chromium	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	0.017	0.012	0.015	0.011	0.031	0.019	0.023	0.012	0.013
15	Copper	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Period: Oct.'22 - Mar.'23)

ANNEXURE II

MONTH				Feb.'23						
S. No.	Parameter	Unit	Onshore Discharge Standards	EDI-070-DS (SARASWATIGUNJ)	EDD-023-D (GOPEDANGA)	EDD-406-D2 (JAMGORA)	EDD-406-D3 (JAMGORA)	EDC-072-D9 (PARULIA)	EDC-074-D2 (PARULIA)	EDC-074-V (PARULIA)
1	pH		5.5-9.0	7.81	8.46	8.38	8.36	8.42	8.54	8.57
2	Temperature	deg. C	40 deg. C	29.4°C	27.8°C	28.1°C	31.4°C	29.9°C	30.7°C	32.3°C
3	Suspended Solids	mg/l	100	36	11	<2	<2	6	<2	<2
4	Total Dissolved Solids	mg/l	2100	3526	2814	748	704	3796	2762	2180
5	Chlorides	mg/l	600	1580	595	335	112	1152	560	697
6	Sulphates	mg/l	1000	5.8	5.1	3.8	4.9	4.0	3.1	3.7
7	BOD, 3 Days at 27ºC	mg/l	30	3	9	<2	<2	<2	<2	<2
8	COD	mg/l	100	11.0	28.0	<8	<8	8.0	<8	<8
9	Oil & Grease	mg/l	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	1.86	1.62	0.84	0.61	1.89	1.12	0.91
13	Total Chromium	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	0.023	0.024	0.015	0.018	0.024	0.016	0.012
15	Copper	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Period: Oct.'22 - Mar.'23)

ANNEXURE II

MONTH				Mar.'23						
S. No.	Parameter	Unit	Onshore Discharge Standards	EDD-007-D2 (GOPEDANGA)	EDD-364-D4 (GOPEDANGA)	EDD-022-D2 (GOPEDANGA)	EDC-072-D9 (PARULIA)	EDG-240-D1 (PARULIA)	EDD-052-D5 (PRATAPPUR)	EDH-044-D1 (AKANDARA)
1	pH		5.5-9.0	8.57	8.48	8.40	8.38	8.36	8.50	8.33
2	Temperature	deg. C	40 deg. C	35.7°C	36.3°C	37.4°C	37.4°C	35.1°C	36.3°C	30.4°C
3	Suspended Solids	mg/l	100	<2	7	<2	9	32	<2	3
4	Total Dissolved Solids	mg/l	2100	2012	2214	2118	3064	1372	2756	1260
5	Chlorides	mg/l	600	184	163	228	1026	155	855	540
6	Sulphates	mg/l	1000	5.9	6.8	6.2	9.8	7.1	8.30	4.9
7	BOD, 3 Days at 27ºC	mg/l	30	<2	<2	<2	<2	4	<2	<2
8	COD	mg/l	100	<8	<8	<8	8.0	12.0	<8	<8
9	Oil & Grease	mg/l	10	<5.0	<5.0	<5	<5	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	0.92	1.42	0.84	1.35	0.73	1.1	0.87
13	Total Chromium	mg/l	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	0.024	0.011	0.033	0.029	0.015	0.018	0.012
15	Copper	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

ANNEXURE III

Drill Cutting Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Dec.' 22 - Mar.'23)

ANNEXURE III

Sl No.	Parameter	Unit	Limit	Result					
	Well Name			EDD-364-D4	EDG-240-D2	EDG-240-D2	EDI-34-D6	EDI-38-D6	EDD-244-D1
	Month			Dec.22	Dec'22	Feb'23	Feb'23	Mar'23	Mar'23
1	1,1 Dichloroethylene	mg/l	0.7	BDL	BDL	BDL	BDL	BDL	BDL
2	1,2, Dichloroethane	mg/l	0.5	BDL	BDL	BDL	BDL	BDL	BDL
3	1,4 diclorobezene	mg/l	7.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
4	2,4, Dinitrotoluene	mg/l	0.13	BDL	BDL	BDL	BDL	BDL	BDL
5	2,4,5 TP(Silvex)	mg/l	1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
6	2,4,5-Trichlorophenol	mg/l	400.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
7	2,4,6, Trichlorophenol	mg/l	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
8	2,4-Dichlorophenoxyacetic acid	mg/l	10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
9	Arsenic	mg/l	5.0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
10	Barium (as Ba)	mg/l	100.0	0.5	0.8	1.1	0.6	<0.1	<0.1
11	Benzene	mg/l	0.5	BDL	BDL	BDL	BDL	BDL	BDL
12	Cadmium (as Cd)	mg/l	1.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
13	Carbon Tetrachloride	mg/l	0.5	BDL	BDL	BDL	BDL	BDL	BDL
14	Chlorobenzene	mg/l	100.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
15	Chlorodane	mg/l	0.03	BDL	BDL	BDL	BDL	BDL	BDL
16	Chloroform	mg/l	6.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
17	Corrosivity	mg/l	None	Non Corrosive	Non Corrosive	Non Corrosive	Non Corrosive	Non Corrosive	Non Corrosive
18	Cresols	mg/l	200.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
19	Endrin	mg/l	0.02	BDL	BDL	BDL	BDL	BDL	BDL
20	Heptachlor	mg/l	0.008	BDL	BDL	BDL	BDL	BDL	BDL
21	Hexachlorobenzene	mg/l	0.13	BDL	BDL	BDL	BDL	BDL	BDL
22	Hexachlorobutadiene	mg/l	0.5	BDL	BDL	BDL	BDL	BDL	BDL
23	Hexachloroethene	mg/l	3.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
24	Ignitability	None	None	Non Flammable	Non Flammable	Non Flammable	Non Flammable	Non Flammable	Non Flammable
25	Lead (as Pb)	mg/l	5.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Lindane	mg/l	0.4	BDL	BDL	BDL	BDL	BDL	BDL
27	Mercury (as Hg)	mg/l	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
28	Methoxychlor	mg/l	10.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
29	Methyl Ethyl Ketone	mg/l	200.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
30	Nitrobenzene	mg/l	2.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
31	Oil and Grease	mg/l	None	BDL	BDL	BDL	BDL	BDL	BDL
32	Pentachlorophenol	mg/l	100.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
33	Pyridine	mg/l	5.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
34	Reactivity	None	None	Non Reactive	Non Reactive	Non Reactive	Non Reactive	Non Reactive	Non Reactive
35	Selenium (as Se)	mg/l	1.0	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
36	Silver	mg/l	5.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
37	Tetra chloro ethylene	mg/l	0.7	BDL	BDL	BDL	BDL	BDL	BDL
38	Total Chromium	mg/l	5.0	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
39	Toxaphene	mg/l	0.5	BDL	BDL	BDL	BDL	BDL	BDL
40	Trichloroethylene	mg/l	0.5	BDL	BDL	BDL	BDL	BDL	BDL
41	Vinyl Chloride	mg/l	0.2	BDL	BDL	BDL	BDL	BDL	BDL
42	m-Cresol	mg/l	200.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
43	o-Cresol	mg/l	200.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
44	p-Cresol	mg/l	200.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0

ANNEXURE IV

ANNEXURE IV

Ambient Noise Monitoring Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.

(Period: Oct.'22 to Mar.'23)

Ambient Noise Monitoring Result				
Location	**DAY TIME**		**NIGHT TIME**	
	Limit as per the EC, dBA	**Noise Level (Leq) dBA**	**Limit as per the EC, dBA**	**Noise Level (Leq) dBA**
KULDIHA [EDN # 099]	75	57.65	70	49.00
MCS-MALANDIGHI	75	60.47	70	50.00
SARASWATIGUNJ [EDI # 039]	75	59.13	70	50.04
GOPALPUR WAREHOUSE	75	55.75	70	43.76
GGS#002 NEAR MAIN GATE SECURITY ROOM	75	58.96	70	51.62
JAMGORA [EDP # 406]	75	55.43	70	49.66
NACHAN [EDD – 053]	75	55.69	70	49.12
PRATAPPUR [EDD # 049]	75	59.4	70	52.39
JATGORIA [EDD – 005]	75	48.78	70	45.66
KANTABERIA [EDD-012]	75	51.93	70	48.70
PARULIA [EDC-413]	75	51.95	70	42.59
KHATGORIA [GGS # 001]	75	56.12	70	46.01
BANSIA [EDD – 411]	75	55.25	70	48.91
LABNAPARA [EDH # 064]	75	57.16	70	45.79
SARENGA	75	57.56	70	48.67

ANNEXURE V

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					Oct.'22				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	GGS-01 RO			EDD-50 RO	
					Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5-9.0	5.5 to 9.0	7.63	7.49	7.58	7.81	7.79
2	Temperature	deg. C	40 deg. C		32.9°C	31.9°C	33.4°C	32.2°C	34.4°C
3	Suspended Solids	mg/l	100	100	<2	<2	3	<2	<2
4	Total Dissolved Solids	mg/l	2100	---	1426	816	2092	2276	1218
5	Chlorides	mg/l	600	---	628	307	885	865	480
6	Sulphates	mg/l	1000	---	4.8	3.0	5.6	5.1	3.6
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	0.95	0.6	1.05	1.60	0.83
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.014	0.011	0.017	0.022	0.017
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3					

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month						Oct.'22			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge		EDH-64 RO			
					Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5-9.0	5.5 to 9.0	7.53	8.02	7.98	7.45	7.45
2	Temperature	deg. C	40 deg. C		32.3°C	29.3°C	29.7°C	28.9°C	32.3°C
3	Suspended Solids	mg/l	100	100	<2	2	<2	4	2
4	Total Dissolved Solids	mg/l	2100	---	3126	6618	544	9156	6766
5	Chlorides	mg/l	600	---	1170	2894	215	3280	2870
6	Sulphates	mg/l	1000	---	6.80	8.4	5.9	9.1	5.6
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.75	1.04	0.9	1.4	1.3
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.026	0.033	0.028	0.041	0.019
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3					

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month						
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDN-99 RO	
					Outlet	Reject
1	pH		5.5-9.0	5.5 to 9.0	7.80	7.65
2	Temperature	deg. C	40 deg. C		31.2°C	32.4°C
3	Suspended Solids	mg/l	100	100	<2	3
4	Total Dissolved Solids	mg/l	2100	---	1720	9128
5	Chlorides	mg/l	600	---	585	3890
6	Sulphates	mg/l	1000	---	3.9	6.20
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2
8	COD	mg/l	100	250	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	0.75	1.85
13	Total Chromium	mg/l	1	2	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.015	0.025
15	Copper	mg/l	0.2	3	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01
21	Iron	mg/l	.....	3		

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					Nov.'22				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	GGS-01 RO			EDD-50 RC	
					Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5-9.0	5.5 to 9.0	7.37	7.80	7.16	7.37	7.55
2	Temperature	deg. C	40 deg. C		29.9°C	28.8°C	28.9°C	28.9°C	29.7°C
3	Suspended Solids	mg/l	100	100	3	<2	5	<2	<2
4	Total Dissolved Solids	mg/l	2100	---	1798	1042	2462	2558	1530
5	Chlorides	mg/l	600	---	895	470	1085	1140	510
6	Sulphates	mg/l	1000	---	4.8	3.0	5.8	4.7	3.6
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.7	0.92	2.1	1.50	0.98
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.022	0.018	0.027	0.019	0.014
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	<0.1	<0.1	0.45	<0.1	<0.1

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month						Nov.'22			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge		EDH-64 RO			
					Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5-9.0	5.5 to 9.0	7.90	7.3	8.1	7.63	7.05
2	Temperature	deg. C	40 deg. C		29.3°C	26.6°C	24.8°C	26.4°C	29.7°C
3	Suspended Solids	mg/l	100	100	<2	3	<2	7	2
4	Total Dissolved Solids	mg/l	2100	---	3314	5318	752	8216	5066
5	Chlorides	mg/l	600	---	1534	2046	310	3780	2218
6	Sulphates	mg/l	1000	---	6	5.9	4	6.7	6.9
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	2	<2
8	COD	mg/l	100	250	<8	8.0	<8	10.0	8.0
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.95	1.93	0.88	2.2	2.2
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.026	0.018	0.013	0.027	0.031
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	<0.1	<0.1	<0.1	<0.1	0.22

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.

(Period: Oct.'22 - Mar.'23)

ANNEXURE V

Month						Dec			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDN-99 RO		GGS-01 RO		
					Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5-9.0	5.5 to 9.0	7.95	7.24	7.70	7.81	7.20
2	Temperature	deg. C	40 deg. C		29.5°C	29.6°C	26.8°C	26.0°C	27.8°C
3	Suspended Solids	mg/l	100	100	<2	6	4	<2	6
4	Total Dissolved Solids	mg/l	2100	---	1470	8378	2192	1598	2886
5	Chlorides	mg/l	600	---	565	3518	960	510	1260
6	Sulphates	mg/l	1000	---	3.1	7.80	4.8	<2.5	5.30
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	3	<2	<2	<2
8	COD	mg/l	100	250	<8	9	<8	<8	8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.15	2.65	1.6	1.1	1.75
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.024	0.039	0.028	0.013	0.033
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	<0.1	0.53	0.2	0.15	0.14

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					.'22				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDD-50 RO			EDH-64 RC	
					Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5-9.0	5.5 to 9.0	7.1	7.25	7.19	6.75	6.70
2	Temperature	deg. C	40 deg. C		28.4°C	26.1°C	25.3°C	24.9°C	25.3°C
3	Suspended Solids	mg/l	100	100	3	<2	5	<2	<2
4	Total Dissolved Solids	mg/l	2100	---	2384	912	4544	4962	934
5	Chlorides	mg/l	600	---	946	406	1940	2170	460
6	Sulphates	mg/l	1000	---	5.9	<2.5	6.5	6.9	4.5
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.2	0.8	1.65	1.43	0.7
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.014	<0.01	0.019	0.021	0.011
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.26	0.19	0.65	0.52	0.14

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					Dec.'22				
						EDN-99 RO			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5-9.0	5.5 to 9.0	6.65	6.85	6.68	6.73	6.86
2	Temperature	deg. C	40 deg. C		24.1°C	26.9°C	24.3°C	27.9°C	26°C
3	Suspended Solids	mg/l	100	100	3	3	<2	7	<2
4	Total Dissolved Solids	mg/l	2100	---	7968	3438	1622	7358	2532
5	Chlorides	mg/l	600	---	3365	1425	585	3358	1120
6	Sulphates	mg/l	1000	---	7.30	6.5	5	7.7	4.9
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.55	0.95	0.63	1.15	0.79
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.026	0.018	0.014	0.022	0.014
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.41	1.23	0.19	0.37	0.12

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					Jan.'23				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	GGS-01 RO		EDD-50 RO		
					Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5-9.0	5.5 to 9.0	7.18	7.30	6.78	6.90	7.09
2	Temperature	deg. C	40 deg. C		27.9°C	26.2°C	25.3°C	25.5°C	23.6°C
3	Suspended Solids	mg/l	100	100	<2	<2	<2	<2	2
4	Total Dissolved Solids	mg/l	2100	---	1566	4260	2380	1292	4622
5	Chlorides	mg/l	600	---	488	1895	885	465	1962
6	Sulphates	mg/l	1000	---	2.9	5.7	7.8	3.5	8.30
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	0.68	1.13	0.95	0.8	1.35
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.010	0.017	0.019	0.013	0.024
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.25	0.22	0.35	0.3	0.73

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					Jan.'23				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDH-64 RO			EDN-99 RC	
					Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5-9.0	5.5 to 9.0	6.69	6.95	7.28	7.2	7.55
2	Temperature	deg. C	40 deg. C		23.8°C	24.5°C	22.7°C	24.3°C	22.0°C
3	Suspended Solids	mg/l	100	100	4	<2	2	<2	<2
4	Total Dissolved Solids	mg/l	2100	---	4882	754	7982	6210	1682
5	Chlorides	mg/l	600	---	2115	310	3063	2765	785
6	Sulphates	mg/l	1000	---	6.8	4.2	7.70	7.3	4.6
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.6	0.45	1.93	1.73	0.82
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.023	0.019	0.025	0.015	0.012
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.98	<0.1	0.3	0.15	0.16

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month						Feb.'23			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge		GGS-01 RO			
					Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5-9.0	5.5 to 9.0	7.35	8.6	8.55	8.57	8.59
2	Temperature	deg. C	40 deg. C		25.1°C	29.1°C	23.8°C	27.7°C	29.4°C
3	Suspended Solids	mg/l	100	100	3	<2	<2	4	4
4	Total Dissolved Solids	mg/l	2100	---	7838	3374	1038	4038	3856
5	Chlorides	mg/l	600	---	3445	1115	171	1380	1610
6	Sulphates	mg/l	1000	---	8.9	6.9	4.8	7.4	5.9
7	BOD, 3 Days at 27ºC	mg/l	30	30	2.6	<2	<2	<2	<2
8	COD	mg/l	100	250	10.0	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	2.6	1.96	0.85	2.11	0.98
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.026	0.018	0.012	0.022	0.015
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.95	0.26	0.22	0.49	0.62

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

ANNEXURE V

Month						Feb			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDD-50 RO		EDH-64 RO		
					Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5-9.0	5.5 to 9.0	8.40	8.62	8.48	8.35	8.52
2	Temperature	deg. C	40 deg. C		28.1°C	29.6°C	26.4°C	27.8°C	27.4°C
3	Suspended Solids	mg/l	100	100	<2	6	3	<2	5
4	Total Dissolved Solids	mg/l	2100	---	972	5432	7432	826	8538
5	Chlorides	mg/l	600	---	387	2095	3645	429	4260
6	Sulphates	mg/l	1000	---	5	6.50	7.3	5.1	8.00
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	0.68	1.08	1.8	0.75	2.11
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.011	0.016	0.024	0.013	0.029
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.34	1.18	0.77	0.39	1.02

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					.'23				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDN-99 RO			GGS-01 RC	
					Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5-9.0	5.5 to 9.0	7.6	8.37	7.88	7.89	7.96
2	Temperature	deg. C	40 deg. C		30.3°C	29.1°C	33.6°C	33.7°C	32.6°C
3	Suspended Solids	mg/l	100	100	4	<2	7	<2	<2
4	Total Dissolved Solids	mg/l	2100	---	5982	1326	6780	2834	1234
5	Chlorides	mg/l	600	---	2465	582	3160	1033	530
6	Sulphates	mg/l	1000	---	6.3	4.8	7.9	5.5	3.0
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	8.0	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.35	0.8	2.6	1.15	0.65
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.019	0.011	0.023	0.016	0.014
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.85	0.42	1.22	0.21	0.12

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					March'23				
						EDD-50 RO			
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5-9.0	5.5 to 9.0	8.48	7.48	7.85	7.22	7.62
2	Temperature	deg. C	40 deg. C		33.2°C	29.4°C	31.6°C	29.4°C	28.3°C
3	Suspended Solids	mg/l	100	100	3	6	<2	8	5
4	Total Dissolved Solids	mg/l	2100	---	4142	2754	876	4078	5296
5	Chlorides	mg/l	600	---	1565	940	375	1085	2321
6	Sulphates	mg/l	1000	---	6.10	6.4	3.9	7.30	6.6
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2
8	COD	mg/l	100	250	<8	<8	<8	<8	<8
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	1.4	0.75	0.61	0.88	1.2
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.018	0.017	0.011	0.020	0.019
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.61	0.81	0.18	0.95	0.47

ANNEXURE V

R.O. water analysis report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
(Period: Oct.'22 - Mar.'23)

Month					March'23				
S. No.	Parameter	Unit	Onshore Discharge Standards	CPCB Limit for Discharge	EDH-64 RO		EDN-99 RO		
					Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5-9.0	5.5 to 9.0	8.15	7.73	8.43	8.11	7.95
2	Temperature	deg. C	40 deg. C		29.8°C	27.6°C	32°C	32.1°C	32.7°C
3	Suspended Solids	mg/l	100	100	<2	10	4	<2	7
4	Total Dissolved Solids	mg/l	2100	---	1032	10828	7485	1714	8118
5	Chlorides	mg/l	600	---	408	4512	3460	590	3590
6	Sulphates	mg/l	1000	---	<2.5	9.8	9.1	6.3	12.4
7	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	2	<2	3
8	COD	mg/l	100	250	<8	8.0	10.0	<8	18.0
9	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
10	Phenolic Compounds	mg/l	1.2	1	<0.002	<0.002	<0.002	<0.002	<0.002
11	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
12	Fluorides	mg/l	1.5	2	0.92	1.75	1.62	0.94	1.7
13	Total Chromium	mg/l	1	2	<0.05	<0.05	<0.05	<0.05	<0.05
14	Zinc	mg/l	0.1	5	0.012	0.024	0.023	0.018	0.027
15	Copper	mg/l	0.2	3	<0.05	<0.05	<0.05	<0.05	<0.05
16	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05
17	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
19	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02
20	Hexavalent Chromium	mg/l	0.1	0.1	<0.01	<0.01	<0.01	<0.01	<0.01
21	Iron	mg/l	.....	3	0.29	0.75	0.52	0.23	0.78

ANNEXURE VI

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
Period: Oct.'22 to Mar.'23

ANNEXURE VI

GROUND WATER SAMPLE FOR THE MONTH OF NOV,2022									
Date of Sampling					18.11.2022	18.11.2022	18.11.2022	18.11.2022	18.11.2022
Latitude & Longitude					Lat:23°34'27.0"N, Long:87°23'00.1"E	Lat:23°35'15.19"N, Long:87°22'08.5"E	Lat:23°36'38.4"N, Long:87°20'09.0"E	Lat:23°37'34.6"N, Long:87°19'00.1"E	Lat:23°37'46.6"N, Long:87°20'15.7"E
S. No.	Parameter	Minimum Detection Limit	Drinking Water Specification(Second Revision)- IS:10500 - 2012 and Amendment No. 4 November 2021		Akandara Village Near Adibasi Para (House of Kishor Soren)	Dhabani Village near house of Sapan Bauri house Tubewell	Nachan Village near House of Arup Ghatak Tubewell	Bansia Village near ICDS Washpara Tubewell	Kalikapur Village near Durga Mandir Tubewell
			Requirement(Acceptable Limit)	Permissible limit in the Absence of Alternate Source					
1	Colour, Hazen Units	5	5	15	BDL	BDL	BDL	BDL	BDL
2	pH Value	2	6.5-8.5	No relaxation	7.1	6.9	7.92	7.3	6.91
3	Turbidity, NTU	1	1	5	BDL	BDL	8	1.6	2.4
4	Total Dissolved Solids, mg/L	10	500	2000	72	52	418	324	288
5	Total Suspended Solids, mg/L	2	---	---	BDL	BDL	3	BDL	BDL
6	Aluminium (as Al), mg/L	0.01	0.03	0.2	BDL	BDL	BDL	BDL	BDL
7	Ammonia (as total ammonia -N), mg/L	0.1	0.5	No relaxation	BDL	BDL	BDL	BDL	BDL
8	Anionic Detergents (as MBAS), mg/L	0.1	0.2	1	BDL	BDL	BDL	BDL	BDL
9	Barium (as Ba), mg/l	0.05	0.7	No relaxation	BDL	BDL	BDL	BDL	BDL
10	Boron (as B), mg/L	0.5	0.5	1.0	BDL	BDL	BDL	BDL	BDL
11	Calcium (as Ca), mg/L	2	75	200	19	8	86	46	59
12	Chloride (as Cl), mg/L	2	250	1000	9	18	11	9	62
13	Copper (as Cu), mg/L.	0.05	0.05	1.5	BDL	BDL	BDL	BDL	BDL
14	Fluoride (as F), mg/L	0.05	1	1.5	BDL	0.18	0.28	0.61	0.5
15	Free Residual Chlorine ,mg/L	0.1	0.2	1	BDL	BDL	BDL	BDL	BDL
16	Magnesium (as Mg), mg/L	2	30	100	7	4	26	15	21
17	Manganese (as Mn), mg/L, Max.	0.05	0.1	0.3	BDL	BDL	0.067	BDL	BDL
18	Mineral Oil, mg/L, Max	1	1	No relaxation	BDL	BDL	BDL	BDL	BDL
19	Nitrate (as NO_3), mg/L	0.5	45	No relaxation	BDL	BDL	0.81	0.78	BDL
20	Phenolic Compounds (as C_6H_5OH) ,mg/L	0.001	0.001	0.002	BDL	BDL	BDL	BDL	BDL
21	Sulphate (as SO_4), mg/L, Max.	2.5	200	400	BDL	BDL	10.5	6.8	4.5
22	Silver (as Ag), mg/L	0.1	0.1	No relaxation	BDL	BDL	BDL	BDL	BDL
23	Sodium (as Na), mg/L	1	---	---	11	7	83	88	56
24	Selenium (as Se), mg/L	0.005	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
25	Cadmium (as Cd), mg/L	0.003	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL
26	Cyanide (as CN), mg/L	0.02	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL
27	Lead (as Pb), mg/L	0.01	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
28	Mercury (as Hg), mg/L	0.001	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL
29	Total Arsenic (as As), mg/L	0.01	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
30	Polynuclear aromatic hydrocarbons (as PAH), mg/L	0.0001	0.0001	No relaxation	BDL	BDL	BDL	BDL	BDL
31	Pesticide Residues,µg/L	0.01	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
32	Total Coliform Count, MPN/100 mL	<1	Shall not be detectable in any 100 ml sample		Absent	Absent	Absent	Absent	Absent
33	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
34	Polychlorinated Biphenyls, mg/L	0.0005	0.0005	No relaxation	BDL	BDL	BDL	BDL	BDL
35	Chloramines,mg/L	0.1	4	No relaxation	BDL	BDL	BDL	BDL	BDL
36	Molybdenum,mg/L	0.05	0.07	No relaxation	BDL	BDL	BDL	BDL	BDL
37	Sulphide,mg/L	0.5	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL
38	Electrical Conductivity at 25° C, µmhos/cm	10	---	---	120	88	696	546	490
39	Phosphorus(as P), mgL	0.01	---	---	BDL	BDL	BDL	BDL	BDL
40	Nickel, mg/L	0.02	0.02	No relaxation	BDL	BDL	BDL	BDL	BDL
41	Total Chromium,mg/L	0.05	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL
42	Zinc,mg/L	0.01	5	15	0.013	BDL	0.024	0.017	0.02
43	Total Alkalinity as $CaCO_3$,mg/L	5	200	600	36	24	346	286	143
44	Total Hardness,mg/L	5	200	600	75	36	321	178	234

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Ltd.
Period: Oct.'22 to Mar.'23

ANNEXURE VI

GROUND WATER SAMPLE FOR THE MONTH OF NOV,2022									
Date of Sampling					18.11.2022	18.11.2022	18.11.2022	19.11.2022	19.11.2022
Latitude & Longitude					Lat:23°36'30.2"N, Long:87°22'14.0"E	Lat:23°36'97.3"N, Long:87°23'43.2"E	Lat:23°35'12.3"N, Long:87°24'55.5"E	Lat:23°34'59.3"N, Long:87°24'27.0"E	Lat:23°31'31.4"N, Long:87°24'59.4"E
S. No.	Parameter	Minimum Detection Limit	Drinking Water Specification(Second Revision)- IS:10500 - 2012 and Amendment No. 4 November 2021		Kantaberia Village(House of Toofan Das) Tubewell	Jatgoria near Mosjid (House of Sk Niashar) Tubewell	Saraswatiganj village near Hari Mandir Tubewell	Ghatakdanga Village near Atchala Tubewell	Sarenga Village near Sarenga Primary School Tubewell
			Requirement(Acceptable Limit)	Permissible limit in the Absence of Alternate Source					
1	Colour, Hazen Units	5	5	15	BDL	BDL	BDL	BDL	BDL
2	pH Value	2	6.5-8.5	No relaxation	7.15	7.45	7.6	6.92	7.22
3	Turbidity, NTU	1	1	5	1.3	3.3	1.9	24	115
4	Total Dissolved Solids, mg/L	10	500	2000	130	172	186	64	98
5	Total Suspended Solids, mg/L	2	---	---	BDL	BDL	BDL	8	52
6	Aluminium (as Al), mg/L	0.01	0.03	0.2	BDL	BDL	BDL	BDL	BDL
7	Ammonia (as total ammonia -N), mg/L	0.1	0.5	No relaxation	BDL	BDL	BDL	BDL	BDL
8	Anionic Detergents (as MBAS), mg/L	0.1	0.2	1	BDL	BDL	BDL	BDL	BDL
9	Barium (as Ba), mg/l	0.05	0.7	No relaxation	BDL	BDL	BDL	BDL	BDL
10	Boron (as B), mg/L	0.5	0.5	1.0	BDL	BDL	BDL	BDL	BDL
11	Calcium (as Ca), mg/L	2	75	200	21	32	29	14	19
12	Chloride (as Cl), mg/L	2	250	1000	17	26	79	10	11
13	Copper (as Cu), mg/L.	0.05	0.05	1.5	BDL	BDL	BDL	BDL	BDL
14	Fluoride (as F), mg/L	0.05	1	1.5	BDL	0.53	0.41	0.19	0.27
15	Free Residual Chlorine ,mg/L	0.1	0.2	1	BDL	BDL	BDL	BDL	BDL
16	Magnesium (as Mg), mg/L	2	30	100	7	12	13	7	11
17	Manganese (as Mn), mg/L, Max.	0.05	0.1	0.3	BDL	BDL	BDL	0.082	0.411
18	Mineral Oil, mg/L, Max	1	1	No relaxation	BDL	BDL	BDL	BDL	BDL
19	Nitrate (as NO_3), mg/L	0.5	45	No relaxation	BDL	0.8	0.91	0.58	0.65
20	Phenolic Compounds (as C_6H_5OH) ,mg/L	0.001	0.001	0.002	BDL	BDL	BDL	BDL	BDL
21	Sulphate (as SO_4), mg/L, Max.	2.5	200	400	BDL	6.3	5.9	BDL	BDL
22	Silver (as Ag), mg/L	0.1	0.1	No relaxation	BDL	BDL	BDL	BDL	BDL
23	Sodium (as Na), mg/L	1	---	---	38	42	58	15	24
24	Selenium (as Se), mg/L	0.005	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
25	Cadmium (as Cd), mg/L	0.003	0.003	No relaxation	BDL	BDL	BDL	BDL	BDL
26	Cyanide (as CN), mg/L	0.02	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL
27	Lead (as Pb), mg/L	0.01	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
28	Mercury (as Hg), mg/L	0.001	0.001	No relaxation	BDL	BDL	BDL	BDL	BDL
29	Total Arsenic (as As), mg/L	0.01	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
30	Polynuclear aromatic hydrocarbons (as PAH), mg/L	0.0001	0.0001	No relaxation	BDL	BDL	BDL	BDL	BDL
31	Pesticide Residues,µg/L	0.01	0.01	No relaxation	BDL	BDL	BDL	BDL	BDL
32	Total Coliform Count, MPN/100 mL	<1	Shall not be detectable in any 100 ml sample		Absent	Absent	Absent	Absent	Absent
33	Odour	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
34	Polychlorinated Biphenyls, mg/L	0.0005	0.0005	No relaxation	BDL	BDL	BDL	BDL	BDL
35	Chloramines,mg/L	0.1	4	No relaxation	BDL	BDL	BDL	BDL	BDL
36	Molybdenum,mg/L	0.05	0.07	No relaxation	BDL	BDL	BDL	BDL	BDL
37	Sulphide,mg/L	0.5	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL
38	Electrical Conductivity at 25° C, µmhos/cm	10	---	---	220	290	315	110	170
39	Phosphorus(as P), mgL	0.01	---	---	BDL	BDL	BDL	BDL	BDL
40	Nickel, mg/L	0.02	0.02	No relaxation	BDL	BDL	BDL	BDL	BDL
41	Total Chromium,mg/L	0.05	0.05	No relaxation	BDL	BDL	BDL	BDL	BDL
42	Zinc,mg/L	0.01	5	15	0.014	0.018	0.013	0.012	0.01
43	Total Alkalinity as $CaCO_3$,mg/L	5	200	600	71	98	23	25	49
44	Total Hardness,mg/L	5	200	600	79	127	123	63	91

ANNEXURE VII

ANNEXURE VII

Expenditure towards Enterprise Social Commitment for CBM Project, Raniganj by Essar Oil and Gas Exploration and Production Ltd.
Period: October'22 - March'23

Thematic Area	Projects	Beneficiaries	Expenditure
		(No.)	(INR)
HEALTH	Community Health Care Services through Mobile Medical Van (OPD camp and Community awaremess programe)	**9592**	**12,62,938.00**
EDUACATION	Support to Primary level Annual school sports meet at anchalik,circle and district level	**1997**	**2,57,824.00**
SPORTS AND CULTURAL EVENT	Support to sports for Local club and village committee	**2740**	**1,55,300.00**
COMMUNITY INFRASTRUCTURE DEVELOPMENT	Support to community development	**1900**	**29,564.00**
TOTAL		**16229**	**17,05,626.00**

ANNEXURE VIII

ANNEXURE VIII

Expenditure towards Environmental Protection Measures by Essar Oil and Gas Exploration and Production Ltd. Compliance Period: October'22 to March'23		
S. No.	**Particular**	**Expenses (INR)**
1	System upgradation of existing water handling system -Capex	32,86,078
2	Operation & maintenance of the RO system & pumps and water tanker services-Opex	1,53,37,877
TOTAL		**1,86,23,955**

ANNEXURE IX

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.001**	**NO.002**	**NO.003**	**NO.004**	**NO.005**	**NO.006**	**NO.007**	**NO.008**	**NO.009**
Site Name	EDH-033	EDH-031	EDH - 029	EDD - 026	EDD-010	EDD - 011	EDD - 015 [A]	EDD - 015 [B]	EDD - 017 [A]
Village Name	LABNAPARA	DHABANI	DHABANI	KANTABERIA	BARGORIA	BARGORIA	BARGORIA	BARGORIA	PRATAPPUR
Date of Sampling	21.11.2022	21.11.2022	21.11.2022	21.11.2022	22.11.2022	22.11.2022	22.11.2022	22.11.2022	22.11.2022
Stack connected to	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	3.96 m.	3.05 m	3.65 m.	4.26 m.	1.52 m.	3.65 m.	4.57 m.	4.57 m.	4.57 m.
Height of the sampling point from ground level	3.35 m.	3.05 m.	3.65 m.	4.26 m.	1.52 m.	3.04 m.	3.65 m.	3.65 m.	3.65 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM
Temperature of emission, (deg. C)	111	98	98	104	78	102	106	103	94
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	10.36	10.08	10.98	11..08	9.03	11.81	11.11	10.25	10.13
Quantity of gas flow, (Nm^3/hr)	227.32	231.78	251.11	248.28	216.70	266.44	247.25	236.20	232.26
Total Conc. Nox + THC , (g/Kw-hr)	0.1233	0.1268	0.1033	0.1235	0.1067	0.1622	0.1382	0.1265	0.1314
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1217	0.1252	0.1001	0.1218	0.1038	0.1604	0.1366	0.1250	0.1299
Concentration of Carbon Monoxide, (g/Kw-hr)	0.11	0.11	0.09	0.13	0.08	0.14	0.13	0.11	0.11
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.010**	**NO.011**	**NO.012**	**NO.013**	**NO.014**	**NO.015**	**NO.016**	**NO.017**	**NO.018**
Site Name	EDD - 017 [B]	EDD-009	EDD - 006	EDD-008	EDD-013	EDE-018	EDE-002	EDE-019	EDE-001
Village Name	PRATAPPUR	BORGORIA	BARGORIA	JAMBON	JATGORIA	JATGORIA	JATGORIA	JATGORIA	JATGORIA
Date of Sampling	22.11.2022	22.11.2022	23.11.2022	23.11.2022	23.11.2022	23.11.2022	23.11.2022	23.11.2022	23.11.2022
Stack connected to	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.57 m.	4.26 m.	3.35 m.	4.52 m.	4.26 m.	4.87 m.	4.26 m.	3.60 m.	3.96 m.
Height of the sampling point from ground level	3.65 m.	4.26 m.	3.04 m.	3.96 m.	4.26 m.	4.80 m.	3.65 m.	3.35 m.	3.65 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m	0.1015 m
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM
Temperature of emission, (deg. C)	118	107	108	102	103	99	81	114	109
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	11.29	10.30	10.31	11.06	10.27	11	9.07	11.23	10.32
Quantity of gas flow, (Nm^3/hr)	243.96	229.33	227.03	248.50	229.50	250.26	217.28	244.75	228.85
Total Conc. Nox + THC , (g/Kw-hr)	0.1113	0.1281	0.1184	0.1330	0.1283	0.1367	0.1041	0.1219	0.1172
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1097	0.1267	0.1169	0.1314	0.1268	0.1351	0.1017	0.1202	0.1156
Concentration of Carbon Monoxide, (g/Kw-hr)	0.12	0.12	0.11	0.13	0.11	0.12	0.08	0.13	0.11
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.019**	**NO.020**	**NO.021**	**NO.022**	**NO.023**	**NO.024**	**NO.025**	**NO.026**	**NO.027**
Site Name	EDD-005	EDD - 007	EDD - 003	EDD - 003 [B	EDD - 003 [C	EDD - 004	EDD - 012	EDD-020	EDD-021
Village Name	JATGORIA	JAMBON	BARGORIA	BARGORIA	BARGORIA	BARGORIA	KANTABERIA	JAMBON	JAMBON
Date of Sampling	23.11.2022	24.11.2022	24.11.2022	24.11.2022	24.11.2022	24.11.2022	24.11.2022	24.11.2022	24.11.2022
Stack connected to	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.57 m.	3.65 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	6.09 m.	4.26 m.	3.96 m.
Height of the sampling point from ground level	3.96 m.	3.04 m.	3.04 m.	3.04 m.	3.04 m.	3.96 m.	4.87 m.	4.26 m.	3.35 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.127 m	0.1015 m.	0.1015 m.
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM
Temperature of emission, (deg. C)	112	122	110	111	113	109	98	113	115
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	10.37	12.86	10.34	10.36	10.39	10.21	10.19	10.39	10.42
Quantity of gas flow, (Nm^3/hr)	227.57	275.57	228.05	227.21	226.38	224.45	230.09	225.85	225.06
Total Conc. Nox + THC , (g/Kw-hr)	0.1167	0.1333	0.1101	0.1156	0.1067	0.1150	0.1184	0.1155	0.1152
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1152	0.1314	0.1086	0.1140	0.1052	0.1135	0.1169	0.1140	0.1137
Concentration of Carbon Monoxide, (g/Kw-hr)	0.12	0.14	0.11	0.12	0.12	0.11	0.12	0.11	0.11
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.028**	**NO.029**	**NO.030**	**NO.031**	**NO.032**	**NO.033**	**NO.034**	**NO.035**	**NO.036**
Site Name	EDD-030	EDH-064	EDH-064	EDD-023	EDD-022 [A]	EDD-022 [B]	EDD-022	EDD-025	EDI-039
Village Name	JAMBON	LABNAPARA	LABNAPARA	FULJHORE	FULJHORE	FULJHORE	FULJHORE	JATGORIA	SARASWATI
Date of Sampling	24.11.2022	25.11.2022	25.11.2022	25.11.2022	25.11.2022	25.11.2022	25.11.2022	25.11.2022	25.11.2022
Stack connected to	50 KVA GG Set	285 KVA GG Set	285 KVA GG Set	50 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA DG Set	50 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.26 m.	5.45 m.	5.45 m.	3.50 m.	1.52 m.	3.65 m.	4.57 m.	3.60 m.	4.26 m.
Height of the sampling point from ground level	4.26 m.	5.40 m.	5.40 m.	3.22 m.	1.52 m.	3.04 m.	3.65 m.	3.35 m.	3.65 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m.
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	HSD	CBM	CBM
Temperature of emission, (deg. C)	87	180	190	78	92	68	124	70	118
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	9.15	14.20	13.15	9.04	10.10	8.91	10.53	8.94	10.44
Quantity of gas flow, (Nm^3/hr)	214.94	262.03	237.41	217.18	233.20	220.94	224.00	219.48	225.91
Total Conc. Nox + THC , (g/Kw-hr)	0.0903	0.0711	0.0669	0.1069	0.1360	0.1164	0.1299	0.1156	0.1093
Total Conc. Nox + NMHC , (g/Kw-hr)	0.0877	0.0701	0.0660	0.1041	0.1345	0.1136	0.1284	0.1129	0.1078
Concentration of Carbon Monoxide, (g/Kw-hr)	0.08	0.09	0.09	0.08	0.12	0.08	0.12	0.08	0.12
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.09	0.00	0.00

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.037**	**NO.038**	**NO.039**	**NO.040**	**NO.041**	**NO.042**	**NO.043**	**NO.044**	**NO.045**
Site Name	EDI-038	EDI-040	EDI-042	EDI - 032 [A]	EDI - 032 [B]	EDH - 034	EDI-036	EDI - 037	EDD - 003
Village Name	SARASWATI	SARASWATI	SARASWATI	AKANDARA	AKANDARA	AKANDARA	AKANDARA	AKANDARA	BARGORIA
Date of Sampling	25.11.2022	26.11.2022	26.11.2022	26.11.2022	26.11.2022	26.11.2022	26.11.2022	26.11.2022	28.11.2022
Stack connected to	125 KVA GG Set	125 KVA GG Set	50 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA DG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.87 m.	4.26 m.	3.65 m.	4.43 m.	4.43 m.	4.26 m.	5.91 m.	4.26 m.	4.26 m.
Height of the sampling point from ground level	4.26 m.	4.26 m.	3.40 m.	4.21 m.	4.21 m.	4.26 m.	3.04 m.	4.26 m.	3.04 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.
Fuel used	CBM	CBM	HSD	CBM	CBM	CBM	CBM	CBM	HSD
Temperature of emission, (deg. C)	120	117	74	118	145	150	139	138	130
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	10.47	12.78	9.83	11.29	10.81	10.75	10.60	10.72	10.95
Quantity of gas flow, (Nm^3/hr)	225.11	227.3	240.04	245.73	217.95	213.48	217.13	218.89	215.76
Total Conc. Nox + THC , (g/Kw-hr)	0.1089	0.1106	0.1911	0.1189	0.1071	0.1028	0.1143	0.1143	0.1163
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1074	0.1091	0.1877	0.1173	0.1057	0.1013	0.1129	0.1128	0.1149
Concentration of Carbon Monoxide, (g/Kw-hr)	0.12	0.11	0.09	0.11	0.11	0.11	0.11	0.11	0.14
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.15	0.00	0.00	0.00	0.00	0.00	0.09

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.046**	**NO.047**	**NO.048**	**NO.049**	**NO.050**	**NO.051**	**NO.052**	**NO.053**	**NO.054**
Site Name	EDD - 006	EDD - 007	EDD - 011	EDD - 017	EDD - 015	EDD - 405	EDC - 072	EDD - 409	EDG - 077
Village Name	BARGORIA	GOPEDANGA	BORGORIA	PRATAPPUR	BARGORIA	KALIKAPUR	NACHAN	PRATAPPUR	KAMALPUR
Date of Sampling	28.11.2022	28.11.2022	28.11.2022	28.11.2022	28.11.2022	28.11.2022	29.11.2022	29.11.2022	29.11.2022
Stack connected to	50 KVA DG Set	50 KVA DG Set	50 KVA DG Set	125 KVA DG Set	125 KVA DG Set	50 KVA DG Set	125 KVA DG Set	125 KVA DG Set	50 KVA DG Set
Emission due to	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.21 m.	4.26 m.	3.57m.	4.57 m.	4.57 m.	4.65 m.	4.26 m.	4.57 m.	3.65 m.
Height of the sampling point from ground level	4.00 m.	4.20 m.	3.25 m.	3.65 m.	3.65 m.	3.26 m.	4.20 m.	3.65 m.	3.26 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m.	0.1015 m.
Fuel used	HSD	HSD	HSD	HSD	HSD	HSD	HSD	HSD	HSD
Temperature of emission, (deg. C)	88	76	62	128	132	60	140	136	67
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	9.16	9.01	8.83	10.59	10.64	8.81	10.74	10.68	8.90
Quantity of gas flow, (Nm^3/hr)	215.25	218.01	222.25	222.24	221.33	222.15	218.66	221.00	220.45
Total Conc. Nox + THC , (g/Kw-hr)	0.1508	0.1736	0.1642	0.1339	0.1324	0.1828	0.1292	0.1393	0.1787
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1476	0.1702	0.1607	0.1319	0.1305	0.1793	0.1274	0.1375	0.1752
Concentration of Carbon Monoxide, (g/Kw-hr)	0.13	0.12	0.12	0.14	0.15	0.16	0.14	0.14	0.11
Concentration of Particulate Matter, (g/Kw-hr)	0.15	0.14	0.16	0.09	0.09	0.16	0.10	0.11	0.17

NOVEMBER:2022									
SL. NO. OF STACKS	**NO.055**	**NO.056**	**NO.057**	**NO.058**	**NO.059**	**NO.060**	**NO.061**	**NO.062**	**NO.063**
Site Name	EDG - 074	EDD - 049	EDD - 053	EDD - 027	EDD - 028	EDI - 070	EDI - 038	EDI - 115	EDI - 046
Village Name	PARULIA	NACHAN	NACHAN	KANTABERIA	DHABANI	GHATAKDAN	SARASWATI	SARASWATI	AKANDARA
Date of Sampling	29.11.2022	29.11.2022	29.11.2022	29.11.2022	29.11.2022	30.11.2022	30.11.2022	30.11.2022	30.11.2022
Stack connected to	125 KVA DG Set	125 KVA DG Set	125 KVA DG Set	50 KVA DG Set	50 KVA DG Set	50 KVA DG Set	50 KVA DG Set	50 KVA DG Set	50 KVA DG Set
Emission due to	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of HSD
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.57 m.	3.87 m.	4.03 m.	4.26 m.	4.26 m.	4.57 m.	4.84 m.	4.57 m.	3.87 m.
Height of the sampling point from ground level	3.65 m.	3.26 m.	3.25 m.	4.20 m.	3.65 m.	4.26 m.	4.26 m.	3.65 m.	3.65 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.
Fuel used	HSD	HSD	HSD	HSD	HSD	HSD	HSD	HSD	HSD
Temperature of emission, (deg. C)	134	140	152	72	66	54	60	61	67
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	10.66	10.70	10.89	9.80	8.86	7.81	8.06	8.81	8.87
Quantity of gas flow, (Nm^3/hr)	221.29	218.31	216.62	240.58	221.15	200.87	203.84	221.87	220.68
Total Conc. Nox + THC , (g/Kw-hr)	0.1338	0.1290	0.1266	0.1716	0.1677	0.1884	0.1675	0.1825	0.1675
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1319	0.1271	0.1247	0.1682	0.1649	0.1857	0.1649	0.1796	0.1645
Concentration of Carbon Monoxide, (g/Kw-hr)	0.14	0.14	0.14	0.12	0.11	0.11	0.12	0.13	0.12
Concentration of Particulate Matter, (g/Kw-hr)	0.10	0.11	0.10	0.18	0.15	0.13	0.17	0.19	0.16

NOVEMBER:2022		
SL. NO. OF STACKS	**NO.064**	**NO.065**
Site Name	EDI-120	EDN-162
Village Name	HARIKI	PATHARDIHA
Date of Sampling	30.11.2022	30.11.2022
Stack connected to	50 KVA DG Set	50 KVA DG Set
Emission due to	Combustion of HSD	Combustion of HSD
Material of construction of stack	M.S.	M.S.
Shape of stack	Circular	Circular
Height of the stack from ground level	4.26 m.	3.85 m.
Height of the sampling point from ground level	3.65 m.	3.85 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m.
Fuel used	HSD	HSD
Temperature of emission, (deg. C)	79	75
Barometric pressure, (mm of Hg)	756	756
Velocity of gas in stack, (m/Sec)	8.07	9.84
Quantity of gas flow, (Nm^3/hr)	193.58	239.57
Total Conc. Nox + THC , (g/Kw-hr)	0.1486	0.1790
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1460	0.1756
Concentration of Carbon Monoxide, (g/Kw-hr)	0.12	0.14
Concentration of Particulate Matter, (g/Kw-hr)	0.15	0.17