Essar Oil and Gas Exploration and Production Ltd
AN 81 B Sector 2B
Martin Luther King Road
Bidhan Nagar
Durgapur - 713212
India

CIN: U11203GJ2016PLC091903

T + 91 3432532202
F +91 3432532201
E eogepl@essarenp.co.in
www.essar.com

EOGEPL/ CBM-RG (E)/ HSE/2021/3365
Date 26th May 2021

To
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 Half-yearly Compliance Report of the Environmental Clearance (Phase-II and Amendment)) by Essar Oil Gas Exploration and Production Limited reg.

Ref: Environmental Clearance of Phase-II granted by MoEF vide letter no. J-11011/351/2009- IA II (I) dated 23.09.2011; Amendment dated 18.06.2012; Transfer of EC from EOL to EOGEPL dated 06.11.2017

Dear Sir

We are enclosing herewith the half-yearly compliance report in respect of the stipulated prior environmental clearance terms and conditions for the Pilot cum Production Phase (Phase-II) and its amendment of CBM project activities for the period of October' 2020 to March' 2021.

Thank you for your continued support.

Warm Regards,
For Essar Oil and Gas Exploration and Production Limited

Kannan Rajendran
Chief Operating Officer
Raniganj East, CBM Project-Durgapur

Enclosed: Phase-II and Amendment Compliance Report

Copy to:

1. The Director, MOEFCC Eastern RO A/3 Chandrasekharpur Bhubaneswar-751 023 Orissa
2. The Environmental Engineer, Durgapur Regional Office, WBPCB, Durgapur-713216

Essar Oil and Gas Exploration and Production Limited

RG (East)-CBM-2001/1 (Phase-II) Half Yearly Environment Clearance Compliance Report

(October'20 to March'21)

Ref: Environment Clearance no. F. No. J-11011/351/2009- IA II (I) dated 23.09.2011

S. No.	EC Conditions	Compliance Status
	A. Specific Conditions	
i.	As proposed, Only 58 pilot-cum-production wells shall be drilled up to a depth of 1000 m. No additional wells shall be drilled without prior permission from this Ministry.	Number of pilot-cum-production wells has been drilled are as per the permission. Amendment in Environmental Clearance has been granted by MoEF & CC for drilling 4 additional supporting wells at each pilot cum production site to augment the production.
ii	As proposed, no drilling of well and any construction work shall be carried out in forest land. No forest land shall be used for installation of Group Gathering Stations (GGSs) and pipeline laying in the proposed location.	All the facilities including well sites & Gas Gathering Stations are located outside the forest area.
iii	Recommendations of the State Forest Department shall be obtained regarding likely impact of the proposed plant on the surrounding protected forests viz. Durgapur PF & Ukhra PF and implemented.	The Conservator of Forests (South East Circle), Forest Department, West Bengal has carried out site inspection on 19th Dec'12 to assess the probable impacts & suggested suitable recommendations. The Additional PCCF, West Bengal forwarded his recommendations to the Additional PCCF, MoEF (Eastern Regional Office). (A copy of the letter has already been submitted along with compliance report after that).
iv	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 directly done with the land owners and the compensation is paid as per the prevailing market rate. There is no involvement of Rehabilitation and Resettlement.
v	Prior permission from the Ministry of Defense shall be obtained regarding impact of proposed	Four (4) nos. of Gas Gathering Station (GGS) and One Main Compressor Station (MCS) was constructed as

S. No.	EC Conditions	Compliance Status
	plant on Panagarh air base, if any.	per the condition of the NOC of Ministry of Defense (MoD).
vi	The surface facilities shall be installed as per the applicable codes and standards, international practices and applicable local regulations.	Surface facilities have been designed as per applicable Code and Standard.
vii	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 PM_{1O}, $PM_{2.5}$, S02, NOx, CO, CH4, VOCs, HC, Non-methane HC etc. Efforts shall be made to improve the ambient air quality of the area.	Ambient Air Quality Monitoring has been carried out 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. Monitoring activity has been carried out from Oct'20 to Mar'21 through a recognized laboratory based in Kolkata. Please find the ambient air quality monitoring results with this report as **Annexure I.**
viii	The company shall monitor data on methane and non-methane hydrocarbon at the drilling site, GGS, CGS and at the SV station from where the gas is supplied to the customers.	Methane hydrocarbons are monitored as part of Ambient Air Quality Monitoring plan at major facilities (GGS, MCS) and villages. Monitoring activity has been carried out from Oct'20 to Mar'21 through a recognized laboratory based in Kolkata. Please find the ambient air quality monitoring results with this report as **Annexure I.**
ix	Mercury shall also be analyzed in air, water and drill cuttings twice during drilling period.	The drilling operation has been temporarily suspended from April, 2017 till date.
x	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	Elevated flare system has been designed as per OISD guidelines. Measures delineated in the EIA/EMP have been taken to prevent fire hazards. The overhead flaring has been installed at a height of 30 m. The following measures have been implemented to prevent fire hazards: • Installation of electrical equipment as per approved hazardous zone classification as communicated to

S. No.	EC Conditions	Compliance Status
	stack height shall be provided as per the regulatory requirements and emissions from stacks shall meet the MOEF/CPCB guidelines.	DGMS. • 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.
xi	The company shall make the arrangement for control of noise from the drilling activity 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 have been installed with acoustic enclosures. Noise monitoring has been carried out in the activity area and surrounding habitat. Please find the results of noise monitoring attached with this report as **Annexure II**.
xii	The company shall comply with the guidelines for disposal of solid waste, drill cutting and drilling fluids for onshore drilling operation notified vide GSR. 546(E) dated 30'August, 2005.	The drilling operation has been temporarily suspended from April, 2017 till date.
xiii	Total fresh water requirement from local approved water suppliers shall not exceed 75 m3/day/well and prior permission shall be obtained from the concerned Authority and a copy submitted to the Ministry's Regional Office at Bhubaneswar. No ground water shall be used without permission of CGWA.	The drilling operation has been temporarily suspended from April, 2017 till date. However, The treated RO water is reused in work over operations and other utilities. Ground water is not used & withdrawn for Industrial water consumption.
xiv	The produced water during drilling operations shall be collected in HDPE lined waste pit to prevent ground water contamination. Effluent shall be properly treated and treated effluent shall conform to CPCB standards. As proposed, produced water may also be used in operational coal mines of Eastern Coal Fields for dust suppression, slurry activities and post-mining restoration efforts etc. Domestic effluent shall be	Produced water is collected & stored in over surface Zn-Al tanks installed at all sites. In case of excess water volume, the extra water is stored HDPE lined pits. Produced water is then transported by pipelines to Reverse Osmosis (RO) plant for treatment. Currently RO treatment plants of total capacity 6100 m3/ day have been installed. The treated water is used for the projects internal operations (work over & site preparation activities). Excess treated water is discharged to nearby

S. No.	EC Conditions	Compliance Status
	disposed through septic tank followed by soak pit. No effluent shall be discharged outside the premises and 'zero' discharge shall be adopted	stream only after complying with the discharge standards. Domestic effluent is treated in septic tank followed by soak pits. There is no discharge of effluent from the facilities.
xv	Water produced during drilling shall be reused in drilling of other core/test wells.	Produced water has been collected & stored in over surface Zn-Al tanks installed at all sites. In case of excess water volume, the extra water is stored HDPE lined pits. If water does not meet the standards then it is passed through suitable treatment system. Water meeting the standards set by CPCB is reused in the construction & work over activities of adjoining wells. Excess water is discharged only after meeting the discharge standards.
xvi	Reverse Osmosis plant shall be installed for further treatment of the wastewater in case the TDS is > 2000 mg/l and treated wastewater shall be reused or discharge on the land after meeting the norms.	Currently, Reverse Osmosis (RO) plants with total capacity of 6100 m3/ day are installed to treat the produced water generated from production wells. Please find the produced water analysis result attached with this report as **Annexure III**. Please find the RO water quality monitoring results attached with this report as **Annexure IV.** The treated water is reused in HF, work over and other construction activities. Excess water is discharged to nearby streams only after meeting the discharges standards. Please find the analysis results of surface water monitoring attached with this report as **Annexure IV A**. Monitoring activity has been carried out from Oct'20 to Mar'20 through a recognized laboratory based in Kolkata.
xvii	Ground water quality monitoring shall be done to assess if produced water storage or disposal has	The ground water monitoring carried out in Post-Monsoon (November) month. The Ground water

S. No.	EC Conditions	Compliance Status
	any effect.	Analysis reports attached with report as **Annexure V**.
xviii	Drilling wastewater including drill cuttings wash water shall be collected in disposal pit lined with HDPE lining and evaporated or treated and shall comply with the notified standards for on-shore disposal. The treated waste water should be reused in other wells during drilling operations. The membership of common TSDF shall be obtained for the disposal of drill cuttings and hazardous waste. Otherwise secured land fill shall be created at the site as per the design of the secured shall be approved by the CPCB and obtain the authorization of the WBPCB. Copy of authorization or membership of TSDF shall be submitted to Ministry's Regional Office at Bhubaneswar.	The drilling operation has been temporarily suspended from April 2017 till date.
xix	Only water based drilling mud shall be used. The drilling mud shall be recycled. Hazardous waste shall be disposed of as per Hazardous Waste (Management, Handling and Trans-boundary Movement) Rules, 2008. The recyclable waste (oily sludge) and spent oil shall be disposed of to the authorized recyclers/re-processors.	The drilling operation has been temporarily suspended from April 2017 till date. Used Oil is sent to authorize recycler. We had arranged disposal of hazardous waste by Mar' 21 end. The copy of the FORM 10 is enclosed as **Annexure VI**.
xx	The Company shall carry out long term subsidence study by collecting base line data before initiating drilling operation till the project lasts. The data so collected shall be submitted six monthly to the Ministry and its Regional Office at Bhubaneswar.	Land Subsidence Study is carried has been started from year 2012 and has been carried out regularly as condition Amendment 4 (viii). In the last 7 years, no significant land subsidence has been observed. The last report of September' 2020 is already submitted with previous compliance report.
xxi	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	The necessary measures have been taken to prevent fire hazards and soil remediation as follows. • Installation of electrical equipment as per approved hazardous zone classification as communicated to

S. No.	EC Conditions	Compliance Status
	drums shall be installed to minimize gaseous emissions during operation.	DGMS • Dry chemical fire extinguishers are available at all well site. • Portable methane gas analyzers (CH4) are available. • 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.
xxii	The project authorities shall install SCADA system with dedicated optical fiber based telecommunication link for safe operation of pipeline and Leak Detection System. Additional sectionalizing valves in the residential area and sensitive installations shall be provided to prevent the amount of gas going to the atmosphere in the event of pipeline failure. Intelligent pigging facility shall be provided for the entire pipeline system for internal corrosion monitoring. Coating and impressed current cathodic protection system shall be provided to prevent external corrosion.	SCADA System is installed for monitoring of wells and Gas Gathering Station. Safe Operation of the pipeline is ensured through continuous motoring of parameter at the Control Room and through regular patrolling. Sectionalizing valves are in Place. Cathodic Ray Protection system has been installed along the length of pipeline to prevent the corrosion. The design and laying of surface facilities have been confirmed to the standards of OISD 141.
xxiii	All the surface facilities including GGS, CGS and SV station shall be as per applicable codes and standards, international practices and applicable local regulations.	All the surface facilities including GGS, CGS and SV stations have been laid as per applicable code and standards.
xxiv	The design, material of construction, assembly, inspection, testing and safety recommendations of operation 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	All surface facilities have been installed as per the ASME/ANSI B 31.8 standards. Pipelines design and laying is also confirms to the ANSI/ASME standards.

S. No.	EC Conditions	Compliance Status
	of burial at river crossing and casings at rails, major road crossings should be in conformity with ANSI/ASME requirements.	
xxv	Annual safety audit should be carried out for the initial three years by an independent agency and report submitted to this Ministry for ensuring the strict compliance of safety regulations on operations and maintenance.	Safety audits are conducted by third party to maintain the safety standards.
xxvi	The project authorities shall patrol and inspect the pipeline regularly for detection of faults as per OISD guidelines and continuous monitoring of pipeline operation by adopting non-destructive method (s) of testing as envisaged in the EMP. Pearson survey and continuous potential survey should be carried out at regular intervals to ensure the adequacy of cathodic protection system.	Regular patrolling and inspection of laid pipeline has been carried out for detection of faults as per OISD guidelines. Pipeline operations shall be continuously monitored by adopting non-destructive methods of testing as envisaged in the EIA/EMP. Pearson survey and continuous potential survey shall be carried out at regular intervals to ensure the adequacy of cathodic protection system.
xxvii	The company shall develop a contingency plan for H_2S release including all necessary recommendations from evacuation to resumption of normal operations. The workers shall be provided with personal H_2S 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 test 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 any presence of gases which are beyond threshold values. All workers have been provided with standard PPEs according to the job requirement.
xxviii	Adequate well protection system shall be provided like BoP or diverter systems as required based on the geological formation of the blocks.	Adequate well control measures along with BOP have been adopted to ensure necessary level of safety.
xxix	Blow Out Preventor (BOP) system shall be installed to prevent well blowouts during drilling operations. BOP measures during drilling shall focus on maintaining well bore hydrostatic pressure by proper pre-well planning and drilling	CBM well hydrostatic pressures are normally less than 2psi. However considering the hydrostatic pressures and sensitivity of well, Blow Out Preventers or diverter systems have been provided at the well head during drilling along with other well control measures such as

S. No.	EC Conditions	Compliance Status
	fluid logging etc.	proper pre-well planning and drilling fluid logging to maintain the hydrostatic pressure.
xxx	The top soil removed shall be stacked separately for reuse during restoration process	The top soil is being spread at the designated area for green belt development at the project's facilities.
xxxi	Emergency Response Plan shall be based on the guidelines prepared by OISO, DGMS and Govt. of India. Recommendations mentioned in the Risk Assessment & Consequence Analysis and Disaster Management Plan shall be strictly followed.	Emergency response plan has been prepared as per the OISD & DGMS guidelines. Recommendations mentioned in risk assessment and consequence analysis are being duly implemented.
xxxii	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 report/disaster management plan have been implemented.
xxxiii	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 plan shall be implemented for the drilling site in accordance with the applicable Indian Petroleum Regulations.	Wells will be abandoned and restored to natural position if found unsuitable for hydrocarbon extraction. Wells will be fully abandoned in compliance with Indian Petroleum Regulations in the event of no economic quality of hydrocarbon is found.
xxxiv	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 and records are maintained.
xxxv	In case the commercial viability of the project is established, the Company shall prepare a detailed plan for development of gas fields and obtain fresh environmental clearance from the Ministry.	MoEF granted amendment in phase II EC for drilling 4 nos. of additional supporting wells at each well site to meet the production capacity over and above 5 lakh m3 per day.
xxxvi	All the commitments made to the public during	Commitments made during the public hearing are being

S. No.	EC Conditions	Compliance Status
	the Public Hearing / Public Consultation meeting held on 26th March, 2010 shall be satisfactorily implemented.	implemented.
xxxvii	Company shall adopt Corporate Environment Policy as per the Ministry's O.M. No. J-11 013/41/2006-1A.II (1) dated 26th April, 2011 and implemented.	Corporate Environmental Policy is in place and being implemented. The copy of the same was already enclosed in the earlier Compliance report.
xxxviii	Provision shall be made for the housing of construction labour within the site with all necessary infrastructure and facilities such as fuel for cooking, mobile toilets, mobile STP, Safe drinking water, medical health care, creche etc. The housing may be in the form of temporary structures to be removed after the completion of the project	We do not intend to bring labor from outside; hence construction of colony is not envisaged. We have been hiring local labour for all construction work. Nonetheless, we are providing all the necessary infrastructure and facilities like porta- cabins, mobile toilets, soak pit & septic tank, safe drinking water, medical health care etc.
General Condition		
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 comply with 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 MoEF for the prior Environmental Clearance.
iii	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals	We comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. Prior

S. No.	EC Conditions	Compliance Status
	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.	approvals will be obtained from appropriate authority.
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 comply with the rules and regulations with regard to handling and disposal of Hazardous Wastes (Management, Handling and Transboundary Movement) Rules, 2008. Authorization from the West Bengal Pollution Control Board has been obtained and valid till 2023. The copy of the same was already enclosed with earlier report.
v	The overall noise levels in and around the plant area shall be kept well 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. 75 dBA (daytime) and 70 dBA (nighttime).	Acoustic hoods, silencers, enclosures will be provided to high noise generating equipment. Noise levels will be restricted to the standards prescribed under EPA Rules, 1989. Regular noise monitoring has been carried out. Please find the noise monitoring results attached with this report as **Annexure II**.
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 is currently in operation and functioning for implementation of environment management plan at large. The sampling and analysis of environmental parameters is been carried out by Scientific Research laboratory, Kolkata (MoEF recognized).
vii	As proposed, Rs. 7.80 Crores earmarked for environment protection and pollution control measures shall be used to implement the conditions stipulated by the Ministry of Environment and Forests as well as the State Government along with the implementation	The environment expenditure for the environment activities is attached as **Annexure VII**.

S. No.	EC Conditions	Compliance Status
	schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	
viii	The Regional Office of this Ministry/Central Pollution Control Board/State Pollution Control 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.	Support has been and will be extended to the Regional office of this Ministry/Central Pollution Control Board/State Pollution Control Board for monitoring the stipulated conditions. Six monthly compliance reports of environmental clearances are regularly submitted to Regional office of MoEF.
ix	A copy of clearance letter shall be sent by the proponent to concerned Panchayat, ZilaParishad / 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 Environmental Clearance (EC) has been circulated to the local administration and was uploaded on the Company's website.
x	The project proponent shall upload the status of compliance of 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; SPM, RSPM, S02, 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.	Compliance reports have been uploaded on company's website & sent to Regional Office of the MOEF, the respective Zonal Office of CPCB and the WBPCB. The Ambient air quality monitoring has been carried out as per revised NAAQM criteria. The criteria pollutant levels namely; SPM, RSPM, SO_2, NOx, HC (Methane & Non-methane), VOCs has been monitored periodically and displayed at the main entrance of the Gas Gathering Station.
xi	The project proponent shall also submit six monthly reports on the status of the compliance	We are submitting the six monthly compliance reports on the status of the compliance of the stipulated

S. No.	EC Conditions	Compliance Status
	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.	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.
xii	The environmental statement for each financial year ending 31st March in Form-V as is mandated to be submitted by the project proponent to the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be put on the website of the company along with the status of compliance of environmental conditions and shall also be sent to the respective Regional Offices of the MOEF by e-mail.	The environmental statement for each financial year ending 31st March as Form-V is being regularly submitted to West Bengal Pollution Control Board and the same is uploaded on the company's website along with the status of compliance report. The copy of the last statement has already submitted with previous report.
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 was published in The Telegraph, Calcutta and Anand Bazaar Pathrika on 30th September, 2011. A copy of the same has been submitted in the compliance report during the period Apr'11-Sep'11.
xiv	Project authorities shall inform the Regional Office as well as the Ministry, the date of financial	Financial closure has been prepared in the year of 2010. The development work was commenced on 7th

S. No.	EC Conditions	Compliance Status
	closure and final approval of the project by the concerned authorities and the date of commencing the land development work	Dec, 2011 after obtaining consent to establish from WBPCB.

Essar Oil and Gas Exploration and Production Limited
RG (East)-CBM-2001/1 (Phase-IIA) Half Yearly Environment Clearance Compliance Report
(October'20 to March' 21)
Ref: Environment Clearance no. F. No. J-11011/351/2009- IA II (I) dated 18.06.2012

S. No.	EC Conditions	Compliance Status
4(I)	As proposed, supporting wells (4 nos.) on each pilot-cum-production wells (58 nos.) shall be drilled upto a depth of 1000m. No additional wells/support well shall be drilled without prior permission of this Ministry.	4 supporting wells will be drilled at each pilot-cum-production wells (58x4=232 wells). No additional wells will be drilled without prior approval from MoEF. Total 158 wells drilled till date under this clearance.
4(ii)	Unit shall monitor ground water table within one Km radius of each well during pre-monsoon (i.e. May) and winter season (November). Trend analysis shall be carried out and report shall be submitted to the Ministry's regional office at Bhubaneswar.	Monitoring of ground water table was not been carried out in post-monsoon (i.e. November). Please find the monitoring results attached with this report as **Annexure VIII**.
4(iii)	Permission from CGWA for dewatering shall be obtained and submitted to the Ministry's Regional Office at Bhubaneswar.	Dewatering is an inherent process of CBM extraction & carried at much deeper depths (>500 m) which does not disturb the usable drinking water aquifers located at the shallow depths. "No Objection Certificate" regarding the same has been obtained from State Water Investigation Directorate (SWID), Water Resources Investigation &

S. No.	EC Conditions	Compliance Status
		Development Department, Govt. of West Bengal. (A copy of the letter is attached with previous compliance report). In west Bengal, SWID is the approved local authority of CGWA for giving permission for water withdrawal.
4(iv)	Smokeless flare shall be installed	Smokeless flares will be installed for complete combustion of CBM. Flaring will be carried out only during process upsets.
4(v)	All measures shall be taken to control noise pollution during drilling process. Acoustic enclosure/barrier shall be installed.	Only silent generator sets that meets the specifications of CPCB are used. Acoustic enclosures have been provided to major noise generating equipment. Earplugs have been provided to the working personnel at the site.
4(vi)	Any produced water shall be treated and recycled/reused within the project area. Any excess water shall be discharged after treatment and meeting the standards prescribed by the CPCB/SPCB. Regular water quality monitoring shall be carried out and monitoring report shall be submitted to the respective Regional Office of the MoEF.	Produced water is treated by Reverse Osmosis (RO) system. Treated water is being reused for work-over & construction activities of other wells. Excess water is discharged to the nearby streams only after complying with the discharge standards. Please find the RO treated water monitoring results attached with this report as **Annexure IV**. Also, please find the surface water monitoring results attached with this report as **Annexure IV A**. .
4(vii)	Approach road shall be constructed prior to the drilling	Approach roads are being constructed wherever the access is not available.
4(viii)	Land subsidence shall be monitored regularly and monitoring report shall be submitted to CPCB, SPCB and respective Ministry's regional office	Land Subsidence Study is carried has been started from year 2012 and has been carried out regularly as condition Amendment 4 (viii). In the last 7 years, no significant land subsidence has been observed. The last report of September' 2020 is already submitted with previous compliance report.

S. No.	EC Conditions	Compliance Status
5	All the specific conditions and general conditions specified in the environmental clearance accorded vide Ministry's letter no.J-11011/351/2009-IA II (I) dated 23rd September, 2011 shall be implemented	All the specific and general conditions of the Phase-II Environmental Clearance are being implemented.
6	Consent to Establish & Operate for the revised proposal shall be obtained from the W.B. Pollution Control Board	Regular CTE & CTO will be obtained from Pollution Control Board and will be submitted to MoEF.
7	No further expansion or modifications in the plant shall be carried out without prior approval of the Ministry of Environment and 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 if required, if any.	No further expansion or modification will be done in the project configuration without prior approval from the MoEF.

ANNEXURE I

Name of Location			MCS						GGS- 01					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	48.07	41.39	41.89	49.89	49.25	46.47	37.09	41.45	45.92	45.59	47.28	45.92
PM 10	µg/m^3	100	86.34	86.30	88.82	84.73	86.37	87.43	79.9	85.72	86.12	81.40	85.66	84.09
Nitrogen Dioxide	µg/m^3	80	38.79	41.24	42.60	43.67	40.67	42.73	37.95	41.79	43.67	43.09	41.58	41.76
Sulphur Dioxide	µg/m^3	80	5.96	6.25	6.53	6.51	6.11	6.02	5.25	5.26	6.53	6.04	6.08	6.19
Carbon Monoxide	mg/m^3	2	0.446	0.484	0.466	0.484	0.498	0.508	0.465	0.465	0.522	0.502	0.512	0.522
Hydrocarbon	mg/m^3	NIL	1.74	1.74	0.18	1.94	1.78	1.88	1.62	1.62	1.82	1.68	1.92	2.04
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	µg/m^3			2.53			3.02			2.65			3.19	
Benzo(a)Pyrene	ng/m^3	1		0.23			0.37			0.32			0.46	
Ammonia	µg/m^3	400		25.41			29.76			27.17			32.55	
Ozone	µg/m^3	180		36.74			40.25			37.23			46.71	
Lead	µg/m^3	1		0.12			0.17			0.12			0.21	
Nickel	ng/m^3	20		12.87			15.82			12.33			19.02	
Arsenic	ng/m^3	6		1.49			1.79			1.61			1.92	
Benzene	µg/m^3	5		1.44			1.81			1.51			1.91	

ANNEXURE I

Name of Location			GGS- 02						GGS-04					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	38.78	39.68	43.40	41.90	44.05	43.52	42.09	49.33	36.22	43.29	50.51	43.29
PM 10	µg/m^3	100	73.50	76.56	76.10	80.59	87.14	85.98	77.85	85.61	79.17	85.88	87.30	85.88
Nitrogen Dioxide	µg/m^3	80	38.33	41.71	42.29	41.76	41.21	41.97	40.14	41.41	43.09	42.29	42.14	41.96
Sulphur Dioxide	µg/m^3	80	5.91	6.05	6.09	5.88	6.07	6.06	5.78	6.07	5.95	6.11	6.36	6.07
Carbon Monoxide	mg/m^3	2	0.474	0.468	0.488	0.486	0.522	0.534	0.492	0.502	0.458	0.492	0.508	0.517
Hydrocarbon	mg/m^3	NIL	1.62	1.62	1.74	1.94	1.90	2.04	1.68	1.68	1.84	2.02	1.88	1.96
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	µg/m^3			2.67			3.31			2.97			3.26	
Benzo(a)Pyrene	ng/m^3	1		0.29			0.43			0.41			0.44	
Ammonia	µg/m^3	400		26.47			31.49			29.56			31.07	
Ozone	µg/m^3	180		38.73			43.15			43.88			42.03	
Lead	µg/m^3	1		0.10			0.20			0.17			0.18	
Nickel	ng/m^3	20		11.46			18.41			16.23			17.02	
Arsenic	ng/m^3	6		1.61			1.80			1.79			1.71	
Benzene	µg/m^3	5		1.46			1.92			1.73			1.87	

ANNEXURE I

Name of Location			PARULIA						SARASWATIGUNJ					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	42.73	44.33	43.78	38.09	49.89	42.90	46.71	47.87	49.25	57.05	52.42	57.05
PM 10	µg/m^3	100	82.27	86.19	89.34	78.25	80.89	81.24	86.14	86.73	86.37	86.29	94.82	86.29
Nitrogen Dioxide	µg/m^3	80	39.67	42.94	42.21	44.20	43.06	43.52	40.01	40.01	41.74	42.13	40.35	42.05
Sulphur Dioxide	µg/m^3	80	5.30	5.42	6.19	6.48	6.16	5.82	5.46	5.59	6.27	5.83	6.18	5.90
Carbon Monoxide	mg/m^3	2	0.443	0.462	0.482	0.468	0.528	0.514	0.464	0.470	0.488	0.498	0.508	0.514
Hydrocarbon	mg/m^3	NIL	1.62	1.62	1.74	1.94	1.67	1.94	1.54	1.54	1.88	1.98	2.08	1.98
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	µg/m^3			2.45			2.81			3.02			3.37	
Benzo(a)Pyrene	ng/m^3	1		0.20			0.33			0.44			0.48	
Ammonia	µg/m^3	400		23.76			28.96			31.07			31.53	
Ozone	µg/m^3	180		35.47			41.98			44.09			42.88	
Lead	µg/m^3	1		0.09			0.19			0.18			0.22	
Nickel	ng/m^3	20		10.07			17.78			17.38			19.75	
Arsenic	ng/m^3	6		1.41			1.78			1.89			2.03	
Benzene	µg/m^3	5		1.32			1.72			1.76			1.96	

ANNEXURE I

Name of Location			PRATPPUR						BANSIA					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	38.26	43.13	43.07	42.90	40.86	41.21	38.12	33.97	41.02	43.18	42.75	40.16
PM 10	µg/m^3	100	70.62	83.68	80.45	81.24	74.96	76.95	78.83	73.87	75.03	85.39	86.16	79.19
Nitrogen Dioxide	µg/m^3	80	38.22	41.12	43.78	43.78	42.11	44.71	39.62	42.85	43.22	42.21	41.23	42.55
Sulphur Dioxide	µg/m^3	80	5.00	5.46	6.08	6.07	5.91	6.03	5.17	5.30	6.10	6.09	5.90	6.07
Carbon Monoxide	mg/m^3	2	0.452	0.468	0.475	0.474	0.536	0.534	0.424	0.454	0.464	0.468	0.524	0.498
Hydrocarbon	mg/m^3	NIL	1.64	1.64	1.82	1.92	1.58	1.78	1.58	1.58	1.76	1.98	1.95	1.84
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	µg/m^3			2.61			2.73			2.51			3.05	
Benzo(a)Pyrene	ng/m^3	1		0.31			0.28			0.25			0.35	
Ammonia	µg/m^3	400		26.02			27.15			25.04			29.83	
Ozone	µg/m^3	180		36.76			40.02			37.63			43.67	
Lead	µg/m^3	1		0.10			0.12			0.11			0.17	
Nickel	ng/m^3	20		11.85			16.94			11.24			18.96	
Arsenic	ng/m^3	6		1.57			1.68			1.44			1.81	
Benzene	µg/m^3	5		1.48			1.63			1.41			1.88	

ANNEXURE I

Name of Location			JAMGORA						KULDIHA					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	44.35	35.98	38.04	45.92	42.22	38.09	40.59	45.98	41.27	50.09	46.76	49.89
PM 10	µg/m^3	100	84.48	71.65	76.39	84.09	82.74	78.25	83.25	88.97	81.31	88.17	87.61	84.73
Nitrogen Dioxide	µg/m^3	80	38.64	44.95	44.20	42.60	39.99	44.35	39.15	40.73	41.76	41.31	40.54	42.39
Sulphur Dioxide	µg/m^3	80	5.41	5.24	6.49	6.48	6.06	6.16	6.02	6.17	5.81	6.05	5.90	6.36
Carbon Monoxide	mg/m^3	2	0.428	0.482	0.482	0.494	0.508	0.514	0.468	0.472	0.468	0.478	0.512	0.522
Hydrocarbon	mg/m^3	NIL	1.71	1.71	0.18	1.88	1.74	2.02	1.74	1.74	1.92	2.02	1.83	2.04
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	µg/m^3			2.83			2.87			2.92			3.14	
Benzo(a)Pyrene	ng/m^3	1		0.36			0.40			0.39			0.41	
Ammonia	µg/m^3	400		27.53			30.47			28.72			30.08	
Ozone	µg/m^3	180		42.16			42.81			43.16			41.79	
Lead	µg/m^3	1		0.13			0.16			0.14			0.19	
Nickel	ng/m^3	20		14.18			18.12			15.12			18.66	
Arsenic	ng/m^3	6		1.74			1.84			1.81			1.83	
Benzene	µg/m^3	5		1.65			1.79			1.68			1.84	

ANNEXURE I

Name of Location			JATGORIA						Gopalpur Warehouse					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	37.26	41.34	46.3	46.47	45.02	50.09	40.57	43.11	44.04	52.29	48.13	41.90
PM 10	µg/m^3	100	82.02	82.36	87.26	87.43	84.22	88.17	82.10	87.34	84.67	83.63	91.06	80.59
Nitrogen Dioxide	µg/m^3	80	37.75	42.47	41.31	41.42	41.51	42.15	38.60	40.68	41.45	41.74	39.96	42.69
Sulphur Dioxide	µg/m^3	80	5.28	5.26	6.11	6.02	6.19	6.18	6.15	5.98	6.56	6.10	6.02	5.89
Carbon Monoxide	mg/m^3	2	0.484	0.484	0.498	0.490	0.516	0.532	0.452	0.464	0.484	0.503	0.052	0.528
Hydrocarbon	mg/m^3	NIL	1.58	1.58	1.84	1.88	1.77	1.98	1.70	1.70	0.18	2.14	1.97	1.88
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	µg/m^3			2.72			2.94			2.78			3.35	
Benzo(a)Pyrene	ng/m^3	1		0.33			0.41			0.34			0.45	
Ammonia	µg/m^3	400		27.45			31.09			25.16			32.06	
Ozone	µg/m^3	180		38.13			43.55			40.49			44.02	
Lead	µg/m^3	1		0.13			0.18			0.11			0.21	
Nickel	ng/m^3	20		13.39			18.59			12.71			19.07	
Arsenic	ng/m^3	6		1.58			1.85			1.69			1.88	
Benzene	µg/m^3	5		1.57			1.83			1.53			1.94	

ANNEXURE I

Name of Location			KANTABERIA						NACHAN					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21	Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	41.63	36.80	45.1	43.52	42.86	52.29	35.81	41.04	46.61	41.21	41.81	43.18
PM 10	$\mu g/m^3$	100	80.65	79.90	85.32	85.98	82.44	83.63	72.18	75.03	87.96	76.95	80.11	85.39
Nitrogen Dioxide	$\mu g/m^3$	80	3903	43.83	42.13	41.45	40.68	42.17	38.17	43.96	41.42	43.22	42.24	43.81
Sulphur Dioxide	$\mu g/m^3$	80	5.24	5.21	5.92	6.47	5.89	6.11	5.06	5.68	6.03	6.10	5.70	6.14
Carbon Monoxide	mg/m^3	2	0.468	0.472	0.502	0.514	0.052	0.518	0.438	0.474	0.464	0.482	0.522	0.523
Hydrocarbon	mg/m^3	NIL	1.7	1.70	1.92	1.90	1.72	1.86	1.74	1.74	1.68	1.94	1.63	1.98
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	$\mu g/m^3$			2.58			2.96			2.49			2.85	
Benzo(a)Pyrene	ng/m^3	1		0.26			0.32			0.21			0.35	
Ammonia	$\mu g/m^3$	400		26.88			28.63			24.62			29.05	
Ozone	$\mu g/m^3$	180		36.19			44.54			37.01			41.73	
Lead	$\mu g/m^3$	1		0.11			0.16			0.10			0.15	
Nickel	ng/m^3	20		12.03			14.32			11.75			17.85	
Arsenic	ng/m^3	6		1.53			1.73			1.45			1.70	
Benzene	$\mu g/m^3$	5		1.45			1.77			1.39			1.74	

ANNEXURE I

Name of Location			SARENGA					
Date			Oct'20	Nov'20	Dec'20	Jan'21	Feb'21	Mar'21
Parameter	UoM	NAAQS LIMIT						
PM 2.5	µg/m^3	60	34.54	41.28	34.31	40.16	38.96	45.59
PM 10	µg/m^3	100	74.38	77.50	75.98	79.19	79.23	81.40
Nitrogen Dioxide	µg/m^3	80	37.89	44.53	42.13	42.13	41.04	42.60
Sulphur Dioxide	µg/m^3	80	5.14	5.37	6.19	6.42	6.07	6.08
Carbon Monoxide	mg/m^3	2	0.436	0.464	0.466	0.482	0.518	0.530
Hydrocarbon	mg/m^3	NIL	1.64	1.64	1.8	1.86	1.65	1.82
Mercury	mg/m^3			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	<0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	µg/m^3			2.56			2.89	
Benzo(a)Pyrene	ng/m^3	1		0.24			0.30	
Ammonia	µg/m^3	400		24.79			28.05	
Ozone	µg/m^3	180		36.14			40.74	
Lead	µg/m^3	1		0.09			0.13	
Nickel	ng/m^3	20		10.74			17.07	
Arsenic	ng/m^3	6		1.54			1.70	
Benzene	µg/m^3	5		1.38			1.69	

Noise monitoring report of CBM Raniganj project by Essar Oil Gas Exploration Production Ltd. **ANNEXURE II**

Compliance Period: Oct'20 to Mar'20)

Ambient Noise Monitoring Result				
LOCATION	DAY TIME		NIGHT TIME	
	Permissible Limit as per CPCB dB(A)	Noise Level dB(A)	Permissible Limit as per CPCB dB(A)	Noise Level dB(A)
Jatgoria Village	75	68.18	70	59.08
Saraswatigunj Village	75	62.54	70	59.05
Kantaberia Village	75	69.33	55	67.56
Jamgora Village	75	66.17	70	58.52
Kuldiha Village	75	68.96	70	57.94
Pratappur Village	75	67.28	70	60.41
Bansia Village	75	65.94	70	63.66
Parulia Village	75	67.76	70	62.69
Nachan Village	75	68.33	70	67.97
Sarenga Village	75	63.29	70	58.97
Akandara Village	75	68.58	70	66.08
Khatgoria Village (GGS 001)	75	65.41	70	60.07
Gopalpur Warehouse	75	65.14	70	59.72
Malandighi (MCS)	75	63.68	70	59.04
Gopalpur (GGS 004)	75	67.39	70	62.54

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Oct'20							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDC-072-D6	EDD-405-D2	EDD-052-D3	EDH-033-D7	EDI-036-V1	EDE-005-V1	EDE-060-V1	EDE-001-V1
1	pH		5.5 to 9.0	5.5-9.0	7.89	7.71	7.60	7.41	7.20	7.70	7.39	7.40
2	Temperature			40 deg	38.4°C	34.8°C	32.9°C	33.2°C	32.3°C	34.2°C	34.6°C	35.6°C
3	Total Suspended Solids	mg/l	100	100	<2	7	<2	11	98	3	2	<2
4	Total Dissolved Solids	mg/l	---	2100	2576	1986	3258	2980	4986	2226	2008	2386
5	Chloride	mg/l	---	600	940	705	1210	1075	1860	870	780	905
6	Total Hardness	mg/l	---	1000	43.50	35.60	39.60	59.40	154.40	23.80	55.4	31.70
7	Sulphate	mg/l	---	1000	8.2	6.4	8.5	5.5	6.9	2.6	6	7.5
8	Calcium	mg/l		100	9.5	7.9	9.5	15.8	38.1	4.7	12.7	6.3
9	Magnesium	mg/l	---	10	4.8	3.8	3.8	4.8	14.4	2.9	5.8	3.8
10	Dissolved Oxygen	mg/l		1.2	4.9	5.1	4.8	4.2	4.0	5.0	5.6	5.1
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	3	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	14.0	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	6.2	2.5	4.3	5.9	6	2.10	2.4	3.8
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.014	0.017	0.032	0.021	0.025	0.012	0.019	0.024
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			683.00	573.00	1074.00	915.00	1391.00	793	653.00	885.00
24	Sodium	mg/l	---		1050.0	780.0	1196.0	1180.0	2050.0	915	840.0	895.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---									
28	Lithium	mg/l										
29	Molybdenum	mg/l	---									

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Oct'20				Nov'20			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDE-043-V1	EDI-120 D2	EDI-123-D6	EDN-184-D1	EDG-077-D1	EDG-074-D3	EDCI-409-D5	EDD-017-D2
1	pH		5.5 to 9.0	5.5-9.0	7.83	7.09	7.21	7.02	7.80	7.52	7.05	7.38
2	Temperature			40 deg	34.5°C	37.2°C	33.8°C	36.8°C	39.8°C	39.9°C	38.9°C	38.8°C
3	Total Suspended Solids	mg/l	100	100	<2	24	17	3	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	1678	5460	4986	2510	1254	2146	1770	2948
5	Chloride	mg/l	---	600	712	2140	1880	830	465	830	680	1210
6	Total Hardness	mg/l	---	1000	31.70	704.80	748.40	209.90	47.50	47.50	47.50	55.40
7	Sulphate	mg/l	---	1000	4.8	8.5	7.1	6.5	4.5	6.5	6.1	7.6
8	Calcium	mg/l		100	7.9	174.5	187.3	52.4	11.1	9.5	11.1	14.3
9	Magnesium	mg/l	---	10	2.9	65.4	68.3	19.2	4.8	5.8	4.8	4.8
10	Dissolved Oxygen	mg/l		1.2	5.8	4.0	5.5	5.7	5.9	6.2	5.1	4.7
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	2	<2	2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	10.0	8.0	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	4.75	4.9	5.2	4.7	0.9	1.45	1.05	1.8
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.015	0.029	0.025	0.022	0.015	0.021	0.012	0.019
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			561.00	1525.00	1360.00	1281.00	414.80	683.20	506.30	1012.60
24	Sodium	mg/l	---		650.0	1950.0	1760.0	920.0	530.0	790.0	740.0	1180.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---						<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l							<0.5	<0.5	<0.5	<0.5
29	Molybdenum	mg/l	---						<0.05	<0.05	<0.05	<0.05

MONTH					Oct'20				Nov'20			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDE-043-V1	EDI-120 D2	EDI-123-D6	EDN-184-D1	EDG-077-D1	EDG-074-D3	EDCI-409-D5	EDD-017-D2
30	Palladium	mg/l	---						<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l							<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	---						<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l							<0.02	<0.02	<0.02	<0.02
34	Cobalt	mg/l							<0.1	<0.1	<0.1	<0.1

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Nov'20							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-052-D5	EDD-004-V1	EDD-021-D3	EDE-018-D2	EDD-023 D1	EDH-064-D4	EDI-038-V1	EDI-040-V1
1	pH		5.5 to 9.0	5.5-9.0	7.37	7.58	7.55	7.72	7.15	7.05	7.41	6.65
2	Temperature			40 deg	43.4°C	41.9°C	42.9°C	36.7°C	46.7°C	38.4°C	43.6°C	38.2°C
3	Total Suspended Solids	mg/l	100	100	14	<2	<2	2	<2	4	15	5
4	Total Dissolved Solids	mg/l	---	2100	2648	2392	2586	2462	2664	3708	4608	3240
5	Chloride	mg/l	---	600	1030	905	880	920	1160	1450	1810	1115
6	Total Hardness	mg/l	---	1000	55.40	35.60	63.4	47.50	59.40	59.40	110.80	154.40
7	Sulphate	mg/l	---	1000	7.0	6.0	5.3	5.0	5.7	8.2	8.7	7.2
8	Calcium	mg/l		100	14.3	7.9	15.9	11.1	14.3	14.3	28.6	39.7
9	Magnesium	mg/l	---	10	4.8	3.8	5.8	4.8	5.8	5.8	9.6	13.5
10	Dissolved Oxygen	mg/l		1.2	4.9	5.0	4.5	4.7	4.6	4.1	4.0	4.3
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	2.4	1.85	2.01	1.7	1.8	3.15	3.7	2.9
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.013	0.020	0.017	0.026	0.021	0.029	0.019	0.024
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			963.80	756.40	866.2	835.70	988.20	1195.60	1366.40	1268.80
24	Sodium	mg/l	---		995.0	1040.0	1120	1040.0	970.0	1570.0	2025.0	1220.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	Molybdenum	mg/l	---		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

MONTH					Nov'20							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-052-D5	EDD-004-V1	EDD-021-D3	EDE-018-D2	EDD-023 D1	EDH-064-D4	EDI-038-V1	EDI-040-V1
30	Palladium	mg/l	---		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	---		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Dec'20							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDC-411-D1	EDG-72-D1	EDG-75-V1	EDG-053-D4	EDD-404-D1	EDI-123-D1	EDI-042-D2	EDI-038-D2
1	pH		5.5 to 9.0	5.5-9.0	7.76	7.47	7.70	7.24	7.70	7.01	6.92	7.25
2	Temperature			40 deg	41.9°C	34.4°C	39.7°C	40.5°C	36.8°C	33.7°C	33.0°C	35.8°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	<2	9	62	<2
4	Total Dissolved Solids	mg/l	---	2100	1552	2858	1696	1024	1718	4818	3798	2968
5	Chloride	mg/l	---	600	603	1181	709	390	747	1692	1490	1136
6	Total Hardness	mg/l	---	1000	51.00	71.30	67.30	51.50	59.40	1108.80	411.8	198.00
7	Sulphate	mg/l	---	1000	3.5	6.0	4.5	<2.5	4.0	5.3	7.5	6.2
8	Calcium	mg/l		100	12.7	17.4	15.8	12.7	14.3	284.1	103.2	50.8
9	Magnesium	mg/l	---	10	4.8	6.7	6.7	4.8	5.8	97.2	37.5	17.3
10	Dissolved Oxygen	mg/l		1.2	5	4.9	5.2	5.3	4.9	4.2	4.1	4.7
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	11.0	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.6	2.75	1.5	0.75	1.7	2.90	3.15	1.9
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.016	0.024	0.019	0.012	0.016	0.027	0.027	0.019
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			549.00	817.40	500.20	353.80	463.60	1122.4	988.20	890.60
24	Sodium	mg/l	---		640.0	1220.0	650.0	430.0	680.0	1920	1550.0	1290.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---									
28	Lithium	mg/l										
29	Molybdenum	mg/l	---									

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Dec'20				Jan'21			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-008-D4	EDD-022 D2	EDD-012-D4	EDD-003-D6	EDI-032-D1	EDI-032-D3	EDI-032-D4	EDI-070-D1
1	pH		5.5 to 9.0	5.5-9.0	7.36	7.32	7.45	7.56	7.96	8.50	7.81	7.11
2	Temperature			40 deg	36.7°C	40.3°C	36.8°C	40.1°C	31.5°C	33.2°C	33.8°C	34.5°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	65	<2	9	11
4	Total Dissolved Solids	mg/l	---	2100	2388	1986	2587	2618	2548	4722	4560	6868
5	Chloride	mg/l	---	600	940	747	1032	940	1891	2138	1967	3078
6	Total Hardness	mg/l	---	1000	63.40	23.80	63.40	67.30	510.80	106.90	273.20	843.50
7	Sulphate	mg/l	---	1000	5.0	5.0	6.0	6.9	5.8	7.1	6.5	6.9
8	Calcium	mg/l		100	15.9	6.3	14.3	15.9	126.9	25.4	69.8	215.8
9	Magnesium	mg/l	---	10	5.8	1.9	6.7	6.7	47.1	10.6	24	74.1
10	Dissolved Oxygen	mg/l		1.2	5.2	5.2	5.0	5.4	3.9	5.3	4.9	5.2
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	3	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	11.0	<8	8.0	8.0
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.45	2.1	1.55	2.3	2.4	3.51	2.9	3.75
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.013	0.015	0.020	0.012	0.018	0.029	0.020	0.014
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			744.20	640.50	817.40	927.20	872.30	988.20	768.60	441.80
24	Sodium	mg/l	---		985.0	840.0	1125.0	1080.0	1605.0	2045.0	2110.0	3195.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---									
28	Lithium	mg/l										
29	Molybdenum	mg/l	---									

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Jan'21							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDI-070-D2	EDI-040-D3	EDI-040-D4	EDI-042-D1	EDI-042-D4	EDI-071 D2	EDI-071-D3	EDI-071-D4
1	pH		5.5 to 9.0	5.5-9.0	6.91	7.19	7.26	7.10	7.09	6.97	6.80	6.91
2	Temperature			40 deg	33.8°C	29.9°C	31.8°C	30.7°C	33.4°C	32.5°C	35.3°C	33.9°C
3	Total Suspended Solids	mg/l	100	100	28	15	18	4	2	92	19	3
4	Total Dissolved Solids	mg/l	---	2100	5242	3874	4658	5298	4392	6926	7048	6984
5	Chloride	mg/l	---	600	2214	1473	2176	2613	2024	3154	3344	2841
6	Total Hardness	mg/l	---	1000	819.70	293.00	328.7	788.00	534.60	839.50	748.40	772.20
7	Sulphate	mg/l	---	1000	8.0	5.9	6	7.1	5.7	7.3	9.0	6.8
8	Calcium	mg/l		100	209.5	71.4	85.7	198.4	133.3	215.8	195.2	190.5
9	Magnesium	mg/l	---	10	72.2	27.9	27.9	71.2	49.1	73.1	63.5	72.2
10	Dissolved Oxygen	mg/l		1.2	4.1	4.8	3.9	4.4	5.0	3.2	3.7	5.9
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	2	2	<2	4	3	<2
12	COD	mg/l	250	100	9.0	8.0	9.0	9.0	<8	12.0	10.0	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	3.1	2.64	3.45	4.1	2.8	3.85	4.6	3.35
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.019	0.022	0.017	0.011	0.015	0.029	0.033	0.018
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			585.60	744.2	705.20	872.30	551.40	1006.50	777.10	902.80
24	Sodium	mg/l	---		2130.0	1530	1980.0	2150.0	1895.0	2975.0	3075.0	2758.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---									
28	Lithium	mg/l										
29	Molybdenum	mg/l	---									

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Feb'21							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDG-075-D1	EDG-075-D7	EDD-054-D4	EDD-026-D4	EDD-007-D1	EDE-001-D1	EDE-048-D1	EDE-002-D1
1	pH		5.5 to 9.0	5.5-9.0	8.76	8.91	7.51	8.05	7.62	7.85	7.30	7.81
2	Temperature			40 deg	39.6°C	38.5°C	41.7°C	32.5°C	36.8°C	32.6°C	32.3°C	31.4°C
3	Total Suspended Solids	mg/l	100	100	2	<2	<2	2	<2	6	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	1370	1822	2360	1142	1718	2854	2494	2586
5	Chloride	mg/l	---	600	415	690	780	375	810	1042	845	895
6	Total Hardness	mg/l	---	1000	38.40	30.70	34.50	49.90	38.40	72.90	42.2	15.40
7	Sulphate	mg/l	---	1000	6.5	7.2	5.5	3.9	6.5	8.0	6.2	5.2
8	Calcium	mg/l		100	10.8	7.7	7.7	12.3	9.2	18.5	9.2	3.1
9	Magnesium	mg/l	---	10	2.8	2.8	3.7	4.7	4.7	6.5	4.7	1.9
10	Dissolved Oxygen	mg/l		1.2	4.7	4.1	4.5	5.0	5.3	4.1	5.5	4.7
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.15	1.4	2.2	0.65	0.7	0.95	1.85	2.3
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.019	0.013	0.033	0.024	0.017	0.021	0.017	0.021
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			659.00	946.00	500.00	360.00	433.00	604	555.00	750.00
24	Sodium	mg/l	---		570.0	565.0	895.0	430.0	645.0	1460	1145.0	1090.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	Molybdenum	mg/l	---		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Feb'21							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDG-075-D1	EDG-075-D7	EDD-054-D4	EDD-026-D4	EDD-007-D1	EDE-001-D1	EDE-048-D1	EDE-002-D1
30	Palladium	mg/l	---		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	---		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Feb'21							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-029-D5	EDH-044-D2	EDH-065-V1	EDI-041-D3	EDD-003-D6	EDI-038-D2	EDI-042-D2	EDI-123-D1
1	pH		5.5 to 9.0	5.5-9.0	7.11	7.25	7.12	7.07	7.71	7.36	6.98	6.87
2	Temperature			40 deg	35.8°C	37.9°C	39.7°C	37.6°C	44.5°C	38.5°C	33.7°C	35.5°C
3	Total Suspended Solids	mg/l	100	100	44	<2	6	8	<2	7	61	50
4	Total Dissolved Solids	mg/l	---	2100	9668	7984	5422	5518	2758	4368	10668	11446
5	Chloride	mg/l	---	600	3980	3175	2130	2085	1045	1846	4260	4415
6	Total Hardness	mg/l	---	1000	295.70	80.60	65.30	157.40	38.40	130.50	295.70	672.00
7	Sulphate	mg/l	---	1000	9.4	8.3	6.9	7.8	4.9	6.0	6.9	8.1
8	Calcium	mg/l		100	73.9	20	15.4	40	9.2	32.3	70.8	172.4
9	Magnesium	mg/l	---	10	27.1	7.5	6.5	14.0	3.7	12.1	28.9	58.8
10	Dissolved Oxygen	mg/l		1.2	3.8	4.3	4.0	4.7	4.6	3.5	3.7	3.1
11	BOD, 3 Days at 27ºC	mg/l	30	30	2	<2	<2	<2	<2	<2	2	3
12	COD	mg/l	250	100	9.0	8.0	<8	<8	<8	<8	12.0	14.0
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	2.6	3.15	1.7	2.45	0.89	2.2	3.11	2.8
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.040	0.036	0.013	0.043	0.021	0.033	0.041	0.050
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			695.00	769.00	866.00	952.00	921.00	750.00	744.00	561.00
24	Sodium	mg/l	---		5146.0	4210.0	2465.0	2515.0	1160.0	1710.0	5846.0	5620.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	Molybdenum	mg/l	---		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

MONTH					Feb'21							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-029-D5	EDH-044-D2	EDH-065-V1	EDI-041-D3	EDD-003-D6	EDI-038-D2	EDI-042-D2	EDI-123-D1
30	Palladium	mg/l	---		<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	---		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Mar'21							
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDG-050-D2	EDD-050-D3	EDD-011-D2	EDD-009-D2	EDH-029-D5	EDD-026-D3	EDH-031-D1	EDH-033-D6
1	pH		5.5 to 9.0	5.5-9.0	8.31	7.89	8.23	8.50	7.75	7.77	8.04	8.29
2	Temperature			40 deg	39.6°C	38.5°C	41.7°C	32.5°C	36.8°C	32.6°C	32.3°C	31.4°C
3	Total Suspended Solids	mg/l	100	100	10	<2	2	3	22	5	11	5
4	Total Dissolved Solids	mg/l	---	2100	3318	4502	2372	2992	9624	4260	3576	5146
5	Chloride	mg/l	---	600	1169	2817	736	841	3895	1805	1235	1995
6	Total Hardness	mg/l	---	1000	69.10	65.30	38.40	23.00	318.70	184.30	76.8	49.90
7	Sulphate	mg/l	---	1000	6.0	8.2	5.1	5.3	8.7	6.1	7.5	8.6
8	Calcium	mg/l		100	16.9	15.4	9.2	6.1	78.5	46.2	18.5	12.3
9	Magnesium	mg/l	---	10	6.5	6.5	3.7	1.8	29.8	16.8	7.5	4.7
10	Dissolved Oxygen	mg/l		1.2	3.5	5.1	4.7	5.1	3.3	4.9	4	3.8
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	10.0	<8	8.0	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.8	2.55	1.6	1.45	2.3	1.65	2.65	2.9
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.017	0.022	0.013	0.014	0.026	0.022	0.018	0.023
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l										
24	Sodium	mg/l	---		1460.0	2205.0	965.0	1325.0	4670.0	1920	1730.0	2265.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---									
28	Lithium	mg/l										
29	Molybdenum	mg/l	---									

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Oct'20 -Mar'21)

ANNEXURE III

MONTH					Mar'21			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDI-068-D1	EDN-170-D1	EDN-172-V1	EDN-179-V1
1	pH		5.5 to 9.0	5.5-9.0	7.85	7.21	7.06	7.66
2	Temperature			40 deg	35.8°C	37.9°C	39.7°C	37.6°C
3	Total Suspended Solids	mg/l	100	100	15	26	75	8
4	Total Dissolved Solids	mg/l	---	2100	7878	14986	13624	6922
5	Chloride	mg/l	---	600	3325	6033	5415	2850
6	Total Hardness	mg/l	---	1000	134.40	1017.60	1213.40	391.70
7	Sulphate	mg/l	---	1000	9.0	9.0	6.9	5.5
8	Calcium	mg/l		100	33.8	261.6	310.9	95.4
9	Magnesium	mg/l	---	10	12.1	88.6	106.4	37.3
10	Dissolved Oxygen	mg/l		1.2	3.1	3.6	3.0	4.6
11	BOD, 3 Days at 27ºC	mg/l	30	30	2	2	4	<2
12	COD	mg/l	250	100	9.0	10.0	18.0	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	3.1	3.9	4.25	3.11
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.031	0.021	0.019	0.014
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l		3	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l		0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l						
24	Sodium	mg/l	---		3785.0	7212.0	7146.0	3462.0
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02
26	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	---					
28	Lithium	mg/l						
29	Molybdenum	mg/l	---					

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Oct'20						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-01 RO			EDD-50 RO			
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5 to 9.0	5.5-9.0	7.56	7.05	7.81	7.71	7.65	7.66	7.18
2	Temperature	deg C			34.1°C	32.5°C	33.1°C	32.8°C	33.9°C	28.1°C	29.3°C
3	Total Suspended Solids	mg/l	100	100	2	<2	2	<2	<2	4	3
4	Total Dissolved Solids	mg/l	---	2100	2178	838	3126	2148	588	3218	3226
5	Chlorides	mg/l	---	600	840	108	910	775	93	1240	1048
6	Total Hardness	mg/l	---	---	43.5	39.6	43.5	43.5	39.6	55.4	142.5
7	Sulphates	mg/l	---	1000	8.0	6.5	9.5	6.7	5.5	8.0	8.3
8	Calcium	mg/l			9.5	9.5	9.5	9.5	9.5	14.3	36.5
9	Magnesium	mg/l	---	---	4.8	3.8	4.8	4.8	3.8	4.8	12.5
10	Dissolved Oxygen	mg/l			5.3	6.00	5.0	5.1	6.2	4.9	4.5
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	5.10	4.95	5.3	6.1	5.90	6.35	2.8
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.033	0.031	0.044	0.019	<0.01	0.023	0.035
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			720.0	680.0	811.0	525.0	140.0	860.0	1007.0
24	Sodium	mg/l	---	---	885.0	346.0	1548.0	840.0	370.0	1120.0	1310.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---							
28	Lithium	mg/l									
29	Molybednum	mg/l	---	---							

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Oct'20					Nov'20	
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-44 RO		EDN-99RO			GGS-01 RO	
					Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5 to 9.0	5.5-9.0	7.58	7.67	7.15	7.08	7.10	7.82	7.90
2	Temperature	deg C			28.0°C	32.1°C	33.5°C	31.4°C	31.4°C	31.0°C	28.5°C
3	Total Suspended Solids	mg/l	100	100	<2	4	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	986	4252	2748	1018	4718	2266	1118
5	Chlorides	mg/l	---	600	406	1670	990	567	1810	820	440
6	Total Hardness	mg/l	---	---	71.3	166.3	384.1	122.8	605.9	55.4	59.4
7	Sulphates	mg/l	---	1000	7.0	8.9	8.9	7.5	10.0	8.0	5.5
8	Calcium	mg/l			17.4	41.2	96.8	30.2	146.0	14.3	15.9
9	Magnesium	mg/l	---	---	6.7	15.4	34.6	11.5	58.7	5.8	4.80
10	Dissolved Oxygen	mg/l			5.5	4.1	5.5	6.3	4.9	5.0	5.70
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	0.44	2.95	2.4	0.63	2.67	1.25	0.7
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.015	0.039	0.021	0.019	0.025	0.018	0.011
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			264.0	1354.0	952.0	95.0	1159.0	683.2	329.4
24	Sodium	mg/l	---	---	318.0	1710.0	1040.0	340.0	2028.0	910.0	470.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---						<0.01	<0.01
28	Lithium	mg/l								<0.5	<0.5
29	Molybednum	mg/l	---	---						<0.05	<0.05

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Oct'20					Nov'20	
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-44 RO		EDN-99RO			GGS-01 RO	
					Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet
30	Palladium	mg/l	---	---						<0.5	<0.5
31	Selenium	mg/l								<0.005	<0.005
32	Vanadium	mg/l	---	---						<0.1	<0.1
33	Cadmium	mg/l								<0.02	<0.02
34	Cobalt	mg/l								<0.1	<0.1

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Nov'20						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards		EDD-50 RO			EDH-44 RO		
					Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	8.15	8.06	7.25	7.40	8.20	7.85	8.10
2	Temperature	deg C			31.4°C	29.9°C	31.7°C	29.0°C	28.7°C	27.6°C	30.4°C
3	Total Suspended Solids	mg/l	100	100	<2	3	<2	4	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	3188	2282	546	3180	3022	850	4420
5	Chlorides	mg/l	---	600	1260	745	178	1120	1040	326	1750
6	Total Hardness	mg/l	---	---	63.4	47.5	43.5	67.3	146.5	79.2	170.3
7	Sulphates	mg/l	---	1000	8.9	6.3	<2.5	7.1	4.9	<2.5	6.1
8	Calcium	mg/l			15.9	11.1	9.5	15.9	36.5	17.4	42.8
9	Magnesium	mg/l	---	---	5.8	4.8	4.8	6.7	11.5	8.7	15.4
10	Dissolved Oxygen	mg/l			4.8	5.1	5.1	4.2	5.5	6.0	5.0
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	2.25	1.7	0.60	2.4	2.65	0.81	2.9
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.015	0.020	<0.01	0.024	0.027	0.012	0.019
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			902.8	756.4	207.4	1165.1	1037.0	146.4	1281.0
24	Sodium	mg/l	---	---	1310.0	820.0	205.0	1240.0	1160.0	402.0	1840.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	Molybednum	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Nov'20						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards		EDD-50 RO			EDH-44 RO		
					Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
30	Palladium	mg/l	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	---	---	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Nov'20			Dec'20			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDN-99RO			GGS-01 RO			
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5 to 9.0	5.5-9.0	7.25	8.17	8.50	7.82	7.69	7.90	7.91
2	Temperature	deg C			28.6°C	29.4°C	28.6°C	30.9°C	26.3°C	27.6°C	31.7°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	2	<2	2	2
4	Total Dissolved Solids	mg/l	---	2100	2426	1210	3184	2152	1114	3148	2264
5	Chlorides	mg/l	---	600	805	505	1240	734	380	1140	825
6	Total Hardness	mg/l	---	---	403.9	217.8	562.3	55.4	51.5	87.5	59.4
7	Sulphates	mg/l	---	1000	5.1	3.5	6.0	4.3	<2.5	5.1	8.0
8	Calcium	mg/l			103.2	53.9	139.7	12.7	11.1	22.2	14.3
9	Magnesium	mg/l	---	---	35.6	20.2	51.0	5.8	5.80	7.7	5.8
10	Dissolved Oxygen	mg/l			5.7	6.2	4.8	5.3	6.10	5.0	4.9
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.7	1.05	2.50	2.95	0.58	3.2	2.35
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.022	0.014	0.028	0.017	0.011	0.019	0.011
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			671.0	329.4	1073.6	762.5	353.8	1000.4	884.5
24	Sodium	mg/l	---	---	890.0	490.0	1175.0	952.0	510.0	1211.0	955.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---	<0.01	<0.01	<0.01				
28	Lithium	mg/l			<0.5	<0.5	<0.5				
29	Molybednum	mg/l	---	---	<0.05	<0.05	<0.05				

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Nov'20			Dec'20			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDN-99RO			GGS-01 RO			
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet
30	Palladium	mg/l	---	---	<0.5	<0.5	<0.5				
31	Selenium	mg/l			<0.005	<0.005	<0.005				
32	Vanadium	mg/l	---	---	<0.1	<0.1	<0.1				
33	Cadmium	mg/l			<0.02	<0.02	<0.02				
34	Cobalt	mg/l			<0.1	<0.1	<0.1				

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Dec'20						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-50 RO		EDH-44 RO			EDN-99RO	
					Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5 to 9.0	5.5-9.0	7.38	8.30	7.91	7.35	8.05	7.25	7.28
2	Temperature	deg C			31.7°C	18.9°C	25.5°C	24.4°C	25.4°C	27.9°C	23.5°C
3	Total Suspended Solids	mg/l	100	100	<2	3	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	602	3178	3178	908	3968	2932	1132
5	Chlorides	mg/l	---	600	180	1086	1230	305	1582	1070	395
6	Total Hardness	mg/l	---	---	39.6	83.2	126.7	87.1	83.2	479.2	154.4
7	Sulphates	mg/l	---	1000	5.5	9.0	6.8	<2.5	7.5	4.0	<2.5
8	Calcium	mg/l			9.5	20.6	31.7	19.0	19	125.4	30.1
9	Magnesium	mg/l	---	---	3.8	7.7	11.5	9.6	8.7	40.4	14.4
10	Dissolved Oxygen	mg/l			5.0	4.1	4.1	4.9	3.7	5.1	6.2
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	0.41	2.5	2.85	0.29	3.05	2.75	1.05
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.013	0.012	0.022	0.026	0.023	0.021	0.013
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			268.4	1110.2	1073.6	323.3	1195.6	915.0	396.5
24	Sodium	mg/l	---	---	240.0	1145.0	1320.0	415.0	1720.0	1250.0	470.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---							
28	Lithium	mg/l									
29	Molybednum	mg/l	---	---							

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Dec'20	Jan'21					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards		GGS-01 RO			EDD-50 RO		
					Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.60	8..21	7.90	8.05	7.95	8.09	8.26
2	Temperature	deg C			26.8°C	32.2°C	29.7°C	30.5°C	30.2°C	30.2°C	29.6°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	4	<2	6
4	Total Dissolved Solids	mg/l	---	2100	3687	2496	1186	2898	2664	936	3348
5	Chlorides	mg/l	---	600	1390	990	465	1140	1045	378	1185
6	Total Hardness	mg/l	---	---	657.4	67.3	55.4	71.3	67.3	23.8	79.2
7	Sulphates	mg/l	---	1000	5.0	6.3	4.0	7.0	5.5	4.3	6.1
8	Calcium	mg/l			171.4	15.9	14.3	17.5	14.3	6.3	19
9	Magnesium	mg/l	---	---	55.8	6.7	4.80	6.7	7.7	1.9	7.7
10	Dissolved Oxygen	mg/l			5.5	5.7	6.10	5.0	4.2	5.7	4.0
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	2.90	2.15	0.62	3.05	1.95	0.43	2.1
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.027	0.013	0.011	0.014	0.017	0.012	0.021
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			1061.4	768.6	378.2	866.2	622.7	128.1	1201.7
24	Sodium	mg/l	---	---	1525.0	1086.0	502.0	1265.0	1240.0	442.0	1460.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---							
28	Lithium	mg/l									
29	Molybednum	mg/l	---	---							

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Jan'21						Feb'21
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-44 RO			EDN-99RO			
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5 to 9.0	5.5-9.0	8.12	8.06	7.94	7.24	8.11	7.96	8.41
2	Temperature	deg C			24.6°C	24.5°C	23.9°C	24.3°C	24.1°C	23.8°C	34.4°C
3	Total Suspended Solids	mg/l	100	100	2	<2	2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	2812	892	3182	2614	1142	2814	2278
5	Chlorides	mg/l	---	600	1135	370	1180	970	415	1060	950
6	Total Hardness	mg/l	---	---	114.8	43.6	126.7	467.3	213.8	554.4	30.7
7	Sulphates	mg/l	---	1000	6.3	4.1	6.8	6.0	3.5	7.2	4.8
8	Calcium	mg/l			30.2	12.7	30.2	113.6	49.2	134.9	7.7
9	Magnesium	mg/l	---	---	9.6	2.9	12.5	44.3	22.1	52.9	2.8
10	Dissolved Oxygen	mg/l			5.4	6.1	5.6	4.3	5.5	4.0	3.8
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.75	0.51	2.15	1.65	0.80	1.80	1.70
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.013	0.011	0.015	0.021	0.017	0.023	0.021
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			634.4	125.7	780.8	719.8	256.2	756.4	1086.0
24	Sodium	mg/l	---	---	1245.0	425.0	1315.0	1280.0	520.0	1125.0	735.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---							<0.01
28	Lithium	mg/l									<0.5
29	Molybednum	mg/l	---	---							<0.05

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Jan'21						Feb'21
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-44 RO			EDN-99RO			
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet
30	Palladium	mg/l	---	---							<0.5
31	Selenium	mg/l									<0.005
32	Vanadium	mg/l	---	---							<0.1
33	Cadmium	mg/l									<0.02
34	Cobalt	mg/l									<0.1

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Feb'21						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-01 RO		EDD-50 RO			EDH-44 RO	
					Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet
1	pH		5.5 to 9.0	5.5-9.0	8.35	7.98	8.01	8.55	8.05	7.50	8.15
2	Temperature	deg C			32.6°C	32.7°C	31.5°C	25.9°C	25.6°C	27.6°C	28.7°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	2	<2	2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	1492	2988	3010	156	3690	3148	820
5	Chlorides	mg/l	---	600	495	1070	1148	56	1210	1170	310
6	Total Hardness	mg/l	---	---	38.4	34.5	46.1	11.5	88.3	76.8	34.6
7	Sulphates	mg/l	---	1000	3.0	5.5	6.1	<2.5	6.5	4.8	<2.5
8	Calcium	mg/l			9.2	7.7	10.8	3	21.5	18.5	7.7
9	Magnesium	mg/l	---	---	3.70	3.7	4.7	1.0	8.4	7.5	3.7
10	Dissolved Oxygen	mg/l			4.90	3.2	4.5	5.8	4.0	4.7	5.1
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.1	1.85	1.2	0.52	1.3	2.25	0.75
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.014	0.027	0.015	<0.01	0.011	0.019	0.013
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			708.0	1153.0	1037.0	51.0	1312.0	915.0	183.0
24	Sodium	mg/l	---	---	610.0	1310.0	1290.0	60.0	1610.0	1285.0	395.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l			<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
29	Molybednum	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Feb'21						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-01 RO		EDD-50 RO			EDH-44 RO	
					Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet
30	Palladium	mg/l	---	---	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	---	---	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l			<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Feb'21				Mar'21		
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards		EDN-99RO			GGS-01 RO		
					Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.71	7.20	7.30	7.11	8.15	8.49	8.50
2	Temperature	deg C			27.8°C	30.4°C	25.4°C	31.9°C	34.4°C	32.6°C	32.7°C
3	Total Suspended Solids	mg/l	100	100	3	<2	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	3976	2742	1292	3012	1684	786	3260
5	Chlorides	mg/l	---	600	1840	980	525	1070	660	294	1244
6	Total Hardness	mg/l	---	---	84.5	257.3	168.9	261.1	38.4	19.2	26.9
7	Sulphates	mg/l	---	1000	5.2	7.5	4.0	5.5	6.9	<2.5	7.5
8	Calcium	mg/l			20	63.1	40.0	64.6	9.2	4.6	6.1
9	Magnesium	mg/l	---	---	8.4	24.3	16.8	24.3	3.7	1.90	2.8
10	Dissolved Oxygen	mg/l			4.2	4.1	5.4	4.0	4.1	5.80	3.7
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	2.45	2.50	1.25	2.75	1.95	0.65	2.2
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.021	0.023	0.012	0.027	0.023	0.012	0.027
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			805.0	781.0	378.0	866.0	439.0	256.2	1159.0
24	Sodium	mg/l	---	---	1690.0	1140.0	480.0	1345.0	725.0	345.0	1420.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01		
28	Lithium	mg/l			<0.5	<0.5	<0.5	<0.5	<0.5		
29	Molybednum	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05		

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Feb'21				Mar'21		
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards		EDN-99RO			GGS-01 RO		
					Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
30	Palladium	mg/l	---	---	<0.5	<0.5	<0.5	<0.5	<0.5		
31	Selenium	mg/l			<0.005	<0.005	<0.005	<0.005	<0.005		
32	Vanadium	mg/l	---	---	<0.1	<0.1	<0.1	<0.1	<0.1		
33	Cadmium	mg/l			<0.02	<0.02	<0.02	<0.02	<0.02		
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1		

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Mar'21						
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-50 RO			EDH-44 RO			ED
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet
1	pH		5.5 to 9.0	5.5-9.0	8.10	7.72	8.66	7.97	7.73	8.04	7.88
2	Temperature	deg C			31.5°C	25.9°C	25.6°C	27.6°C	28.7°C	27.8°C	27.6°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	2662	792	3696	5018	1206	5926	4328
5	Chlorides	mg/l	---	600	985	260	1270	1894	460	2046	1428
6	Total Hardness	mg/l	---	---	53.8	38.4	92.2	72.9	11.5	99.8	184.3
7	Sulphates	mg/l	---	1000	5.5	3.0	6.9	8.0	3.6	9.1	9.0
8	Calcium	mg/l			12.3	10.8	23.1	16.9	3.0	9.1	46.2
9	Magnesium	mg/l	---	---	5.6	2.8	8.4	7.5	<1	10.3	16.8
10	Dissolved Oxygen	mg/l			4.5	4.9	3.8	3.5	5.1	3.2	4.2
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	2.4	0.78	3.15	2.65	0.63	3.05	2.11
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.014	<0.01	0.017	0.025	0.019	0.028	0.015
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			908.9	201.0	1037.0	1268.8	384.3	1515.2	815.0
24	Sodium	mg/l	---	---	1180.0	410.0	1350.0	2062.0	530.0	2510.0	1640.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---							
28	Lithium	mg/l									
29	Molybednum	mg/l	---	---							

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Oct'20 to Mar'21)

ANNEXURE IV

Date					Mar'21				
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	N-64RO (New)		EDN-99RO		
					Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.33	7.80	7.45	7.91	7.24
2	Temperature	deg C			26.5°C	26.8°C	30.4°C	25.4°C	31.9°C
3	Total Suspended Solids	mg/l	100	100	<2	3	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	518	7386	5642	1576	7046
5	Chlorides	mg/l	---	600	165	3125	2245	532	2245
6	Total Hardness	mg/l	---	---	46.1	426.2	399.4	145.9	641.3
7	Sulphates	mg/l	---	1000	2.8	10.5	7.3	4.3	8.6
8	Calcium	mg/l			10.8	107.7	104.6	35.4	164.7
9	Magnesium	mg/l	---	---	4.7	38.2	33.6	14.0	55.9
10	Dissolved Oxygen	mg/l			4.7	3.0	4.0	5.5	3.6
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0
14	Phenolic Compounds	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.4	3.60	2.15	0.95	2.90
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.014	0.017	0.019	<0.01	0.022
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l			<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			124.4	915.0	1153.0	586.0	1379.0
24	Sodium	mg/l	---	---	250.0	3610.0	2660.00	695.0	2860.0
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---					
28	Lithium	mg/l							
29	Molybednum	mg/l	---	---					

Surface Water Analysis Report of CBM Raniganj Project of EOGEPL

(Compliance Period: Oct'20 to Mar'21)

ANNEXURE IV A

Date					Oct'20					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	EDD-44(R.O Discharge at EDH-64)	Kunur Nala Downstream Near Kuldiha Bridge
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	7.2	7.82	6.6	7.59	6.85	7.49
2	Temperature	Deg C	---	40 deg C	25.1°C	33.8°C	32.1°C	29.3°C	28.1°C	30.4°C
3	Total Suspended Solids	mg/l	100	100	6	<2	9	12	8	10
4	Total Dissolved Solids	mg/l	---	2100	348	1604	814	766	1820	422
5	Acidity as CaCO3	mg/l	---		38	22	65	25	58	25
6	Total Alkalinity as CaCO3	mg/l	---		78	345	214	185	525	105
7	Total Hardness	mg/l	---		110.9	39.6	35.6	106.9	87.1	134.6
8	Calcium	mg/l	---		26.9	9.5	7.9	25.4	22.2	33.3
9	Magnesium	mg/l	---		10.6	3.8	3.8	10.6	7.7	12.5
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	8	8	<8	<8
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	<5	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15	Fluoride	mg/l	2	1.5	0.75	1.5	1.2	0.95	0.92	0.58
16	Sodium	mg/l	---		140	690	285	320	740	170
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	5	2	0.012	0.018	0.015	0.019	0.019	0.011
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		560	2140	1430	1150	2810	610
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date					Oct'20					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	EDD-44(R.O Discharge at EDH-64)	Kunur Nala Downstream Near Kuldiha Bridge
26	Nitrate Nitrogen(as N),mg/L		0.5		0.43	1.64	1.34	2.03	1.1	3.00
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
28	Iron		3		4.35	0.8	6.15	6.8	2.4	3.15
29	Manganese	mg/l	2		0.075	<0.05	0.089	0.07	0.058	0.068
30	Dissolved Phosphate	mg/l	5		0.09	0.18	0.12	0.1	0.13	0.08
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
34	Free Amonia	mg/l	5		0.035	0.13	Nil	0.06	Nil	0.06
35	Ammonical Nitrogen	mg/l	50		3.5	4.3	5.1	3.1	3.8	2.8
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Oct'20	Nov'20				
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDN-99 (R.O-Discharge)	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	EDD-44(R.O Discharge at EDH-64)
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	7.15	7.21	8.4	8.22	8.11	7.8
2	Temperature	Deg C	---	40 deg C	30.9°C	21.3°C	29.4°C	25.9°C	24.2°C	29.4°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	14	<2
4	Total Dissolved Solids	mg/l	---	2100	1610	368	1364	894	1294	1684
5	Acidity as CaCO3	mg/l	---		38	38	Nil	Nil	2.5	28
6	Total Alkalinity as CaCO3	mg/l	---		590	78	275	290	305	380
7	Total Hardness	mg/l	---		194	130.7	63.4	39.6	102.9	102.9
8	Calcium	mg/l	---		47.6	31.7	14.3	9.5	26.9	28.5
9	Magnesium	mg/l	---		18.3	12.5	6.7	4.8	8.7	7.7
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	<8	<8	8	<8
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	<5	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15	Fluoride	mg/l	2	1.5	1.05	0.91	1.35	1.05	1.45	2.15
16	Sodium	mg/l	---		610	140	480	310	535	630
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	5	2	0.023	0.012	0.011	0.014	0.02	0.019
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		2520	560	1980	1420	1870	2840
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date					Oct'20	Nov'20				
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDN-99 (R.O-Discharge)	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	EDD-44(R.O Discharge at EDH-64)
26	Nitrate Nitrogen(as N),mg/L		0.5		0.57	0.17	2.44	1.06	1.37	2.6
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
28	Iron		3		0.5	0.25	0.17	0.39	2.4	0.41
29	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	0.065	<0.05
30	Dissolved Phosphate	mg/l	5		0.18	0.11	0.19	0.13	0.17	0.21
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
34	Free Amonia	mg/l	5		0.04	0.03	0.42	0.23	0.12	0.09
35	Ammonical Nitrogen	mg/l	50		3.5	2.5	3.8	2.9	2	3
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Nov'20			Dec'20		
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	Kunur Nala Downstream Near Kuldiha Bridge	EDN-99 (R.O-Discharge)	Check Dam Near EDN-099	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)	EDD-44(R.O Discharge at EDH-64)
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	8.38	8.42	7.02	8.24	7.6	7.92
2	Temperature	Deg C	---	40 deg C	23.4°C	24.8°C	23.8°C	18.6°C	26.4°C	23.4°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	5	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	522	1634	1012	460	1148	1886
5	Acidity as CaCO3	mg/l	---		Nil	Nil	52	Nil	36	27
6	Total Alkalinity as CaCO3	mg/l	---		110	415	250	98	325	560
7	Total Hardness	mg/l	---		150.5	237.6	162.4	134.6	63.4	87.1
8	Calcium	mg/l	---		39.6	63.5	41.2	33.3	15.9	22.2
9	Magnesium	mg/l	---		12.5	19.2	14.4	12.5	5.8	7.7
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	<8	<8	<8	<8
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	<5	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15	Fluoride	mg/l	2	1.5	1.1	1.85	0.8	0.65	1.25	2.2
16	Sodium	mg/l	---		210	585	435	190	520	790
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	5	2	<0.01	0.022	0.014	0.017	0.023	0.027
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		890	2510	1410	660	1870	2820
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date					Nov'20			Dec'20		
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	Kunur Nala Downstream Near Kuldiha Bridge	EDN-99 (R.O-Discharge)	Check Dam Near EDN-099	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)	EDD-44(R.O Discharge at EDH-64)
26	Nitrate Nitrogen(as N),mg/L		0.5		4.34	0.81	1.12	<0.1	2.02	**1.68**
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	**<0.1**
28	Iron		3		0.27	0.39	1.05	0.42	0.63	**0.25**
29	Manganese	mg/l	2		<0.05	<0.05	0.058	<0.05	<0.05	**<0.05**
30	Dissolved Phosphate	mg/l	5		0.09	0.18	0.14	0.06	0.12	**0.28**
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	**<0.005**
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	**<0.02**
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	**<0.01**
34	Free Amonia	mg/l	5		0.26	0.32	Nil	0.27	0.09	**0.22**
35	Ammonical Nitrogen	mg/l	50		2.4	2.9	2.6	2.7	3.1	**3.5**
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	**<0.1**
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	**<5**
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	**Agreeable**

Date					Dec'20				Jan'21	
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	EDN-99 (R.O-Discharge)	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	7.75	8.15	7.44	7.9	8.24	8.3
2	Temperature	Deg C	---	40 deg C	26.7°C	19.5°C	23.2°C	23.7°C	16.5°C	27.2°C
3	Total Suspended Solids	mg/l	100	100	<2	21	<2	<2	2	<2
4	Total Dissolved Solids	mg/l	---	2100	1072	1084	952	848	552	1368
5	Acidity as CaCO3	mg/l	---		36	Nil	45	27	Nil	Nil
6	Total Alkalinity as CaCO3	mg/l	---		298	405	240	195	270	860
7	Total Hardness	mg/l	---		47.5	102.9	198	308.9	146.5	63.4
8	Calcium	mg/l	---		11.1	23.8	50.8	76.2	36.5	15.8
9	Magnesium	mg/l	---		4.8	10.6	17.3	28.9	13.5	5.8
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	<8	<8	<8	<8
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	<5	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15	Fluoride	mg/l	2	1.5	1.05	0.95	1.03	2.7	0.45	0.8
16	Sodium	mg/l	---		475	490	385	315	175	610
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	5	2	0.019	0.024	0.018	0.017	<0.01	0.013
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		1540	1510	1510	2670	720	2020
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date					Dec'20				Jan'21	
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	EDN-99 (R.O-Discharge)	Kunur Nala Upstream Near GGS-1	GGS-1(R.O Discharge)
26	Nitrate Nitrogen(as N),mg/L		0.5		0.22	1.62	5.10	<0.1	0.12	0.17
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
28	Iron		3		0.33	6.7	0.85	0.45	0.85	0.41
29	Manganese	mg/l	2		<0.05	0.095	<0.05	<0.05	<0.05	<0.05
30	Dissolved Phosphate	mg/l	5		0.22	0.12	0.08	0.19	0.05	0.04
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
34	Free Amonia	mg/l	5		0.12	0.23	0.04	0.24	0.34	0.47
35	Ammonical Nitrogen	mg/l	50		2.4	3.7	2.5	4.9	3.8	4.7
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Jan'21					Feb'21
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	EDN-99 (R.O-Discharge)	Check Dam Near EDN-099	Kunur Nala Upstream Near GGS-1
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	8.41	8.49	7.9	8.2	8.31	8.28
2	Temperature	Deg C	---	40 deg C	26.4°C	21.3°C	22.8°C	21.6°C	21.5°C	22.8°C
3	Total Suspended Solids	mg/l	100	100	<2	6	<2	<2	4	<2
4	Total Dissolved Solids	mg/l	---	2100	948	1466	812	1564	902	608
5	Acidity as CaCO3	mg/l	---		Nil	Nil	22	Nil	Nil	Nil
6	Total Alkalinity as CaCO3	mg/l	---		580	1019	310	715	315	180
7	Total Hardness	mg/l	---		43.5	114.8	194	265.3	336.6	103.7
8	Calcium	mg/l	---		11.1	28.6	49.2	65.1	85.7	26.2
9	Magnesium	mg/l	---		10.6	10.6	17.3	25	29.8	9.3
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	<8	<8	<8	<8
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	<5	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15	Fluoride	mg/l	2	1.5	0.65	1.2	0.58	1.05	0.61	0.75
16	Sodium	mg/l	---		330	590	255	560	290	205
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	5	2	<0.01	0.018	0.017	0.023	0.012	<0.01
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		1610	2150	1210	2410	1100	1090
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date					Jan'21					Feb'21
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	EDN-99 (R.O-Discharge)	Check Dam Near EDN-099	Kunur Nala Upstream Near GGS-1
26	Nitrate Nitrogen(as N),mg/L		0.5		0.38	1.12	1.91	0.73	0.58	0.29
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
28	Iron		3		0.35	1.45	0.45	0.6	0.85	0.48
29	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
30	Dissolved Phosphate	mg/l	5		0.07	0.12	0.08	0.11	0.09	0.09
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
34	Free Amonia	mg/l	5		0.45	0.64	0.14	0.28	0.24	0.29
35	Ammonical Nitrogen	mg/l	50		4.1	5.3	3.5	4	2.7	3.2
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Feb'21					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-1(R.O Discharge)	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	EDH-064(R.O Discharge)	EDN-99 (R.O-Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	8.41	7.56	8.45	7.78	**7.5**	8.02
2	Temperature	Deg C	---	40 deg C	31.5°C	27.0°C	26.6°C	25.3°C	**27.3°C**	24.3°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	10	2	**<2**	3
4	Total Dissolved Solids	mg/l	---	2100	2092	758	1742	1192	**2038**	834
5	Acidity as CaCO3	mg/l	---		Nil	28	Nil	18	**36**	4
6	Total Alkalinity as CaCO3	mg/l	---		710	96	610	245	**490**	140
7	Total Hardness	mg/l	---		26.9	34.6	72.9	42.2	**549.1**	142.1
8	Calcium	mg/l	---		6.1	7.7	16.9	10.8	**141.6**	35.4
9	Magnesium	mg/l	---		2.8	3.7	7.5	4.7	**47.6**	13.1
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	**<2**	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	<8	<8	**<8**	<8
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	**<5**	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	**<0.002**	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	**<0.5**	<0.5
15	Fluoride	mg/l	2	1.5	1.35	0.81	1.6	0.89	**2.4**	1.01
16	Sodium	mg/l	---		910	370	750	590	**825**	360
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	**<0.05**	<0.05
18	Zinc	mg/l	5	2	0.015	0.011	0.02	0.012	**0.019**	0.017
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	**<0.05**	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	**<0.05**	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	**<0.1**	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	**<0.001**	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		3100	1100	2480	1430	**3020**	1250
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	**<0.02**	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	**<0.01**	<0.01

Date					Feb'21					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-1(R.O Discharge)	EDD-50 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64	EDH-064(R.O Discharge)	EDN-99 (R.O-Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
26	Nitrate Nitrogen(as N),mg/L		0.5		3.79	0.26	1.76	0.95	**3.15**	5.69
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	**<0.1**	<0.1
28	Iron		3		0.6	0.35	4.31	0.55	**8.15**	0.8
29	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	**0.107**	<0.05
30	Dissolved Phosphate	mg/l	5		0.14	0.18	0.22	0.12	**0.21**	0.19
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	**<0.005**	<0.005
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	**<0.02**	<0.02
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	**<0.01**	<0.01
34	Free Amonia	mg/l	5		0.4	0.12	0.39	0.13	**0.07**	0.27
35	Ammonical Nitrogen	mg/l	50		3.6	4.1	2.8	2.9	**3.7**	5.4
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	**<0.1**	<0.1
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	**<5**	<5
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	**Agreeable**	Agreeable

Date					Mar'21					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-1(R.O Discharge)	Kunur Nala Upstream Near GGS-1	EDD-50 (R.O-Discharge)	EDH-064(R.O Discharge)	EDN-99 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	8.2	8.28	7.65	8.04	7.67	8.75
2	Temperature	Deg C	---	40 deg C	22.8°C	31.5°C	27.0°C	28.5°C	25.3°C	24.3°C
3	Total Suspended Solids	mg/l	100	100	6	13	2	2	2	15
4	Total Dissolved Solids	mg/l	---	2100	1462	654	1058	762	1912	1960
5	Acidity as CaCO3	mg/l	---		Nil	Nil	19	8	18	Nil
6	Total Alkalinity as CaCO3	mg/l	---		320	150	255	110	410	525
7	Total Hardness	mg/l	---		38.4	115.4	130.6	84.5	172.8	49.9
8	Calcium	mg/l	---		10.8	32.3	33.8	21.5	43.1	12.3
9	Magnesium	mg/l	---		2.8	8.4	11.2	7.5	15.8	4.7
10	Biochemical Oxygen Demand	mg/l	30	30	<2	<2	<2	<2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	<8	<8	<8	<8	9
12	Oil & Grease	mg/l	10	10	<5	<5	<5	<5	<5	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
15	Fluoride	mg/l	2	1.5	1.55	0.85	1.1	2.8	2.45	1.95
16	Sodium	mg/l	---		635	260	430	340	405	820
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	5	2	0.018	0.012	0.022	0.017	0.012	0.019
19	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
21	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		2610	1240	1940	1480	3540	3260
24	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01

Date					Mar'21					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-1(R.O Discharge)	Kunur Nala Upstream Near GGS-1	EDD-50 (R.O-Discharge)	EDH-064(R.O Discharge)	EDN-99 (R.O-Discharge)	Kunur Nala Downstream between EDH 58 & 64
26	Nitrate Nitrogen(as N),mg/L		0.5		3.26	0.62	1.39	3.02	1.54	0.66
27	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
28	Iron		3		1.5	5.12	0.45	0.61	0.52	2.95
29	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	<0.05	0.08
30	Dissolved Phosphate	mg/l	5		0.21	0.07	0.18	0.12	0.19	0.23
31	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
33	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
34	Free Amonia	mg/l	5		0.29	0.29	0.11	0.22	0.09	0.6
35	Ammonical Nitrogen	mg/l	50		4.2	2.9	3.8	4.3	2.9	2.4
36	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
37	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
38	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Mar'21
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	Kunur Nala Downstream Near Kuldiha Bridge
1	pH at 27^0C		5.5 to 9.0	5.5-9.0	7.38
2	Temperature	Deg C	---	40 deg C	27.3°C
3	Total Suspended Solids	mg/l	100	100	6
4	Total Dissolved Solids	mg/l	---	2100	686
5	Acidity as CaCO3	mg/l	---		25
6	Total Alkalinity as CaCO3	mg/l	---		245
7	Total Hardness	mg/l	---		134.4
8	Calcium	mg/l	---		32.3
9	Magnesium	mg/l	---		13.1
10	Biochemical Oxygen Demand	mg/l	30	30	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8
12	Oil & Grease	mg/l	10	10	<5
13	Phenolic Compounds (as C6H5OH)	mg/l	1	1.2	<0.002
14	Sulphides (as S2) in mg/l	mg/l	2	2	<0.5
15	Fluoride	mg/l	2	1.5	0.9
16	Sodium	mg/l	---		280
17	Total Chromium	mg/l	2	1	<0.05
18	Zinc	mg/l	5	2	0.011
19	Copper	mg/l	3	0.2	<0.05
20	Nickel	mg/l	3	3	<0.05
21	Lead	mg/l	0.1	0.1	<0.1
22	Mercury	mg/l	0.01	0.01	<0.001
23	Electrical Conductivity at 25° C	µmhos/cm	---		1130
24	Cyanide	mg/l	---	0.2	<0.02
25	Hexavalent Chromium	mg/l	0.1		<0.01

Date					Mar'21
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	Kunur Nala Downstream Near Kuldiha Bridge
26	Nitrate Nitrogen(as N),mg/L		0.5		3.99
27	Vanadium	mg/l	0.2		<0.1
28	Iron		3		1.35
29	Manganese	mg/l	2		<0.05
30	Dissolved Phosphate	mg/l	5		0.09
31	Selenium		0.05		<0.005
32	Cadmium	mg/l	2		<0.02
33	Arsenic	mg/l	0.2		<0.01
34	Free Amonia	mg/l	5		0.04
35	Ammonical Nitrogen	mg/l	50		1.9
36	Total residual chlorine	mg/l	1		<0.1
37	colour	Hazen Units	Colourless		<5
38	Odor		Odourless		Agreeable

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of EOGEPL

Compliance Period: Oct'20 to Mar'21

ANNEXURE V

S. No.	Parameter	Unit	S:10500 -1991		Bansia Village	Nachan Village	Kalikapur Village	Bargoria Village	Kantaberia Village	Jatgoria near Mosjid	Dhabani Village
			Desirable limit	Permissible limit							
1	Colour	Hazen	5	15	<5	<5	<5	<5	<5	<5	<5
2	pH Value		6.5-8.5	No relaxation	7.29	6.9	6.42	6.41	6.6	6.57	5.9
3	Turbidity, NTU	NTU	1	5	1.4	1.4	9.8	2.3	17.2	10.6	<1
4	Total Dissolved Solids	mg/l	500	2000	316	378	436	36	206	236	54
5	Total Suspended Solids,	mg/l	---	---	<2	20	5	<2	6	4	<2
44	Total Alkalinity as $CaCO_3$	mg/l	200	600	65	83	95	12	58	61	14
45	Total Hardness	mg/l	200	600	138.6	162.4	277.2	27.7	99	126.7	31.7
6	Aluminium (as Al)	NTU	0.03	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
7	Ammonia (as total ammonia -N)	mg/l	0.5	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Anionic Detergents (as MBAS)	mg/l	0.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
9	Barium (as Ba)	mg/l	0.7	No relaxation	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10	Boron (as B)	mg/l	0.5	1	<1	<1	<1	<1	<1	<1	<1
11	Calcium (as Ca)	mg/l	75	200	31.7	47.6	71.4	6.3	22.2	31.7	7.9
12	Chloride (as Cl)	mg/l	250	1000	98	105	125	6	64	75	16
13	Copper (as Cu)	mg/l	0.05	1.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Fluoride (as F)	mg/l	1	1.5	0.45	0.6	0.51	0.25	0.55	0.3	0.21
15	Free Residual Chlorine	mg/l	0.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	Iron (as Fe)	mg/l	0.3	No relaxation	0.24	3.15	1.5	0.43	1.5	1.12	0.015
17	Magnesium (as Mg)	mg/l	30	100	14.4	10.6	24	2.9	10.6	11.5	2.9
18	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	0.093	0.07	<0.05	0.065	0.055	<0.05
19	Mineral Oil	mg/l	0.5	No relaxation	<1	<1	<1	<1	<1	<1	<1
20	Nitrate (as NO_3)	mg/l	45	No relaxation	0.55	1.03	2.45	0.35	1.6	0.31	0.65
21	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
22	Sulphate (as SO_4)	mg/l	200	400	6	7.5	7.8	<2.5	<2.5	<2.5	<2.5
23	Silver (as Ag)	mg/l	0.1	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
24	Sodium (as Na)	mg/l	---	---	106	126	140	8	70	81	18
25	Selenium (as Se)	mg/l	0.01	No relaxation	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
26	Cadmium (as Cd)	mg/l	0.003	No relaxation	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Cyanide (as CN)	mg/l	0.05	No relaxation	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Lead (as Pb)	mg/l	0.01	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Mercury (as Hg)	mg/l	0.001	No relaxation	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
30	Total Arsenic (as As)	mg/l	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31	Polynuclear aromatic hydrocarbons (as PAH)	mg/l	0.0001	No relaxation	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
32	Pesticide Residues	mg/l	0.01	No relaxation	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
33	Total Coliform Count,	MPN/100 mL	Shall not be detectable in any 100 ml sample		<1	2	<1	<1	<1	<1	<1
34	Odour		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
35	Polychlorinated Biphenyls	mg/l	0.0005	No Relaxation	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
36	Chloramines	us/cm	4	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
37	Molybdenum	mg/l	0.07	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of EOGEPL

Compliance Period: Oct'20 to Mar'21

S. No.	Parameter	Unit	S:10500 -1991		Bansia Village	Nachan Village	Kalikapur Village	Bargoria Village	Kantaberia Village	Jatgoria near Mosjid	Dhabani Village
			Desirable limit	Permissible limit							
38	Sulphide,mg/L	mg/l	0.05	No Relaxation	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
39	Electrical Conductivity at 25° C,	µmhos/cm	---	---	480	530	590	65	280	85	85
40	Phosphorus(as P)	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
41	Nickel	mg/l	0.02	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42	Total Chromium	mg/l	0.05	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
43	Zinc	mg/l	5	15	<0.01	0.011	<0.01	<0.01	0.013	<0.01	<0.01

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of EOGEPL

Compliance Period: Oct'20 to Mar'21

ANNEXURE V

S. No.	Parameter	Unit	S:10500 -1991		Saraswatiganj village	Akandara Village	Ghatakdanga Village	Sarenga Village	Gopalpur Village	Labnapara village
			Desirable limit	Permissible limit						
1	Colour	Hazen	5	15	<5	<5	<5	<5	<5	<5
2	pH Value		6.5-8.5	No relaxation	6.24	6.15	6.8	6.8	5.7	5.6
3	Turbidity, NTU	NTU	1	5	1.8	<1	<1	1.1	<1	<1
4	Total Dissolved Solids	mg/l	500	2000	232	72	58	270	224	278
5	Total Suspended Solids,	mg/l	---	---	<2	<2	<2	<2	<2	<2
44	Total Alkalinity as $CaCO_3$	mg/l	200	600	60	20	16	54	62	70
45	Total Hardness	mg/l	200	600	114.8	47.5	27.7	178.2	114.8	118.8
6	Aluminium (as Al)	NTU	0.03	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
7	Ammonia (as total ammonia -N)	mg/l	0.5	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
8	Anionic Detergents (as MBAS)	mg/l	0.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
9	Barium (as Ba)	mg/l	0.7	No relaxation	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
10	Boron (as B)	mg/l	0.5	1	<1	<1	<1	<1	<1	<1
11	Calcium (as Ca)	mg/l	75	200	28.6	11.1	6.3	46	28.6	31.7
12	Chloride (as Cl)	mg/l	250	1000	72	21	18	81	71	95
13	Copper (as Cu)	mg/l	0.05	1.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
14	Fluoride (as F)	mg/l	1	1.5	0.65	0.43	0.18	0.57	0.48	0.4
15	Free Residual Chlorine	mg/l	0.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
16	Iron (as Fe)	mg/l	0.3	No relaxation	0.02	0.019	<0.1	0.26	<0.1	<0.1
17	Magnesium (as Mg)	mg/l	30	100	10.6	4.8	2.9	15.4	10.6	7.7
18	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Mineral Oil	mg/l	0.5	No relaxation	<1	<1	<1	<1	<1	<1
20	Nitrate (as NO_3)	mg/l	45	No relaxation	4.5	9.5	1.33	1.46	9.66	2.4
21	Phenolic Compounds (as C_6H_5OH)	mg/l	0.001	0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
22	Sulphate (as SO_4)	mg/l	200	400	3.5	<2.5	<2.5	5.1	4	5.5
23	Silver (as Ag)	mg/l	0.1	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
24	Sodium (as Na)	mg/l	---	---	81	23	21	85	76	99
25	Selenium (as Se)	mg/l	0.01	No relaxation	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
26	Cadmium (as Cd)	mg/l	0.003	No relaxation	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Cyanide (as CN)	mg/l	0.05	No relaxation	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
28	Lead (as Pb)	mg/l	0.01	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Mercury (as Hg)	mg/l	0.001	No relaxation	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
30	Total Arsenic (as As)	mg/l	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
31	Polynuclear aromatic hydrocarbons (as PAH)	mg/l	0.0001	No relaxation	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
32	Pesticide Residues	mg/l	0.01	No relaxation	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
33	Total Coliform Count,	MPN/100 mL	Shall not be detectable in any 100 ml sample		<1	<1	<1	<1	<1	<1
34	Odour		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
35	Polychlorinated Biphenyls	mg/l	0.0005	No Relaxation	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
36	Chloramines	us/cm	4	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
37	Molybdenum	mg/l	0.07	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of EOGEPL

Compliance Period: Oct'20 to Mar'21

ANNEXURE V

S. No.	Parameter	Unit	S:10500 -1991		Saraswatiganj village	Akandara Village	Ghatakdanga Village	Sarenga Village	Gopalpur Village	Labnapara village
			Desirable limit	Permissible limit						
38	Sulphide,mg/L	mg/l	0.05	No Relaxation	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
39	Electrical Conductivity at 25° C,	µmhos/cm	---	---	295	102	80	340	330	370
40	Phosphorus(as P)	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
41	Nickel	mg/l	0.02	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
42	Total Chromium	mg/l	0.05	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
43	Zinc	mg/l	5	15	0.015	<0.01	<0.01	0.031	0.027	0.017

FORM 10

[See Rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and E-mail)	ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LIMITED (S.R. WARE HOUSE, G.G.S 4 GOPALPUR, DURGAPUR PIN - 713212
2.	Sender's Authorisation No.	15/25 (HW) - 2449/2008
3.	Manifest Document No.	
4.	Transporter's name and address : (Including Phone No. and E-mail)	SELF
5.	Type of Vehicle	TRUCK
6.	Transporter's Registration No.	—
7.	Vehicle Registration No.	WB65 B/4854
8.	Receiver's name and mailing address (Including Phone No. and E-mail)	AMIT LUBRICANTS M. M. Road, RAGHUNATHPUR, DANKUNI HOOGHLY - 712247 9831785250 — ramit0863@gmail.com
9.	Receiver's Authorisation No.	161/25 (HW) - 3608/2019 date - 30/4/19
10.	Waste Description	Used waste oil
11.	Total Quantity No. of Containers	10.000 LTR m3 or MT 50 Nos.
12.	Physical form	(Solid/Semi-Solid/Sludge/Oily/Tarry/Slurry/ Liquid) ✓
13.	Special handling instructions and additional information	MUSK, HANDGLOBS, SHOES, HELMET
14.	Sender's Certificate Abhishek Roy 20/03/2021 ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LIMITED DURGAPUR CBM PROJECTS	I hereby declare that the contents of the consignment are full and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and Stamp : Signature :	Month 0 3 Day 2 0 Year 2 0 2 1
15.	Transporter acknowledgment of receipt of wastes	
	Name and Stamp : Signature :	Day 2 0 Month 0 3 Year 2 0 2 1
16.	Receiver's Certification for receipt of hazardous and other waste	
	Name and Stamp : Signature : Amit Ra	Day 2 0 Month 0 3 Year 2 0 2 1

Annexure VI

FORM 10

[See Rule 19 (1)]

MANIFEST FOR HAZARDOUS AND OTHER WASTE

1.	Sender's name and mailing address (Including Phone No. and E-mail)	ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LTD GOPALPUR SARENGA ROAD, P.S. KANKSHA DURGAPUR - 713212
2.	Sender's Authorisation No.	15/25(HW) 2449/2008
3.	Manifest Document No.	
4.	Transporter's name and address : (Including Phone No. and E-mail)	SELF
5.	Type of Vehicle	TRUCK
6.	Transporter's Registration No.	WB 39 9103
7.	Vehicle Registration No.	
8.	Receiver's name and mailing address (Including Phone No. and E-mail)	AMIT LUBRICANTS MM ROAD, RAGHUNATHPUR, DANKUNI HOOGHLY - 712247
9.	Receiver's Authorisation No.	101/25(HW) - 3603/2019 dt - 30/4/19
10.	Waste Description	Used waste oil
11.	Total Quantity No. of Containers	..... 10,000 ..... Ltr ..... m3 or MT ..... 50 ..... Nos.
12.	Physical form	(Solid/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)
13.	Special handling instructions and additional information	MUSK, HAND GLOVES, SHOES, HELMET, HOOGLE
14.	Sender's Certificate Authorised Signatory 25/03/2021 OIL AND GAS EXPLORATION AND PRODUCTION LIMITED DURGAPUR CBM PROJECTS	I hereby declare that the contents of the consignment are full and accurately described above by proper shipping name and are categorised, packed, marked, and labelled, and are in all respects in proper conditions for transport by road according to applicable national government regulations.
	Name and Stamp : Signature :	Month Day Year 03 25 2021
15.	Transporter acknowledgment of receipt of wastes	
	Name and Stamp : Signature :	Day Month Year 25 03 2021
16.	Receiver's Certification for receipt of hazardous and other waste	
	Name and Stamp : Signature :	Day Month Year 25 03 2021

ANNEXURE VII

Expenditure towards Environmental Protection Measures at EOGEPL CBM Project, Raniganj
(October' 20 to March' 21)

S. No.	Particular	Expenses (INR)
1	Installation of Reverse Osmosis Treatment System for Produced Water Treatment (Recurring)	Rs. 1,51,54,173.00
2	Environmental Monitoring Activities (Recurring)	Rs. 6,75,684.00
3	HDPE liners for produced water storage at site when needed (Capital)	Rs. 2,86,750.00
4	Non Hazardous Waste Disposal (Recurring)	Rs. 1,83,419.00
5	Green Belt Development (Recurring)	Rs. 2,15,000.00
TOTAL		**Rs. 1,65,15,026.00**

Groung Water Level report of surrounding areas of CBM Ranigan project by Essar Oil Gas Exploration Production Limited **ANNEXURE VIIII**
Compliance Period: Oct'20 to Mar'21

S. No.	Location	Latitude	Longitude	Parapet Height (m)	Well Diameter (m)	Depth to Water from Parapet top (m)	Depth to Water below ground level (m)
1	Nachan	23°36'42.4"N	87°19'58.9"E	0.68	1	2.54	1.86
2	Bansia	23°37.464"N	87°20.151"E	0.76	0.97	2.36	1.6
3	Kalikapur	23°37.464"N	87°20.151"E	0.8	1.85	2.72	1.92
4	Bargoria	23°37'580"N	87°21'397"E	0.7	2.5	2.34	1.64
5	Jatgoria	23°36'973"N	87°23'432"E	0.6	1.8	2.03	1.43
7	Dhabani	23°35'519"N	87°22.085"E	0.95	1.8	1.93	0.98
8	Labnapara	23°35'05.36N	87°22'15.8"E	1.2	1.5	2.31	1.11
9	Akandara	23°34'461"N	87°23'013"E	0.65	1.85	3.61	2.96
10	Sarenga	23°31'665"N	87°24'400"E	0	0.6	1.55	1.55
11	Saraswatigunj	23°35'226"N	87°24'784"E	0.6	1.75	2.67	2.07
12	Ghatakdanga	23°34'147"N	87°24'308"E	1	2.4	3.48	2.48
13	Kantaberia	23°36'829"N	87°22'242"E	0.6	1.3	2.01	1.41
14	Gopalpur	23°30'639"N	87°23'408"E	0.5	1.53	1.9	1.4