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EOGEPL/ CBM-RG (E)/ HSE/2022/4371
Date: 1st December 2022

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 (EOGEPL) reg.

Ref: Environmental Clearance of Phase-II granted by MoEF&CC 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 submit herewith the six monthly compliance report with respect to the stipulated conditions of prior environmental clearance vide F. No. J-11011/351/2009- IA II (I), dated 23rd September, 2011 and it's amendment dated 18th June 2012 granted to EOGEPL for the Pilot cum Production Phase (Phase-II) of CBM project activities. The period consider as April' 2022 to September' 2022.

Thank you for your continued support.

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

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

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

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

Copy to:

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

Essar Oil and Gas Exploration and Production Limited

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

(April'22 to September'22)

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 Survey. The Additional PCCF, West Bengal forwarded his recommendations to the Additional PCCF, MoEF&CC (Eastern Regional Office). (A copy of the letter has already been submitted along with compliance report earlier).
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 conducted 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 plant on Panagarh air base, if any.	Three (3) nos. of Gas Gathering Station (GGS) and One Main Compressor Station (MCS) were constructed as per the condition of the NOC of Ministry of Defense

S. No.	EC Conditions	Compliance Status
		(MoD). GGS 4 is not in Operation.
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 (AAQ) Monitoring being carried out with a NABL accredited laboratory at well sites near to the closest human settlements as per the Ambient Air Quality Emission Standards (NAAQES) issued by the Ministry vide G.S.R No. 826(E) dated 16th November, 2009 for PM10, PM2.5, SO2, NOX, CO, CH4, VOCs, HC, Non-methane HC. Please find AAQ monitoring results of last six months, i.e. April'22 to September'22 attached 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 and non-methane hydrocarbons are monitored as part of Ambient Air Quality Monitoring plan at major facilities (GGS, MCS) and villages. The monitoring results refer to **Annexure I**.
ix	Mercury shall also be analyzed in air, water and drill cuttings twice during drilling period.	Mercury has been analyzed in produced water and ambient air. Mercury levels in ambient air quality is in below detection limits (<1ng/m3). The analysis reports for Air (***Annexure I***) and Water analysis report are attached as **Annexure *III***.
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 stack height shall be provided as per the regulatory requirements and emissions from stacks shall meet the MOEF/CPCB guidelines.	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 DGMS. • Major facilities like GGS, MCS, Ware House etc. are

S. No.	EC Conditions	Compliance Status
		well equipped with Fire hydrant system. • Dry chemical fire extinguishers are available at site. • Online methane gas analyzers (CH4) are available. • Flame proof type lighting fixtures, push buttons and switches at the drill site facilities are used.
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. Once the gas production starts at the well site, the Diesel Generator (DG) sets are replaced with Gas Generator (GG) sets. In production wells Gas Generator sets are operational. Noise monitoring is being carried out in the activity area and surrounding habitat. Please find the results of noise monitoring attached herewith 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.	Drill cuttings and drilling fluids are collected in HDPE lined pit, after that at treatment site, it is stored in RCC pit for further treatment through Drilling Waste Processing Plant. We are in comply with the guidelines for disposal of solid waste, drill cuttings and drilling fluids for onshore drilling operation notified vide GSR.546 (E) dated 30th August, 2005.
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 treated RO water is reused in drilling, work over operations and other utilities. Ground water is not used & withdrawn for Industrial operation.
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	Produced water is collected & stored in adequate designed over surface Zn-Al tanks installed at all sites. In case of excess volume of water is stored HDPE lined pits. Then it transported through pumping with connected pipelines to Reverse Osmosis (RO) plant for treatment. Currently RO treatment plants of total

S. No.	EC Conditions	Compliance Status
	coal mines of Eastern Coal Fields for dust suppression, slurry activities and post-mining restoration efforts etc. Domestic effluent shall be disposed through septic tank followed by soak pit. No effluent shall be discharged outside the premises and 'zero' discharge shall be adopted	capacity 6900 m3/ day are operational. The treated water is used for the projects internal operations (work over & site preparation activities). Excess treated water is discharged to nearby 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 adequate designed over surface Zn-Al tanks installed at all sites. Then send it to RO Plant through pumping with connected pipelines. Water meeting the standards set by CPCB is reused in the construction & work over activities of adjoining wells
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.	Reverse Osmosis (RO) plants total capacity has been enhanced to 6900 m3/ day 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**. We submit herewith the results of sampling & analysis for the period of April'22 to September'22. The sampling and analysis was conducted by NABL accredited laboratory.
Xvii	Ground water quality monitoring shall be done to	The ground water monitoring carried out in Pre-

S. No.	EC Conditions	Compliance Status
	assess if produced water storage or disposal has any effect.	Monsoon (May'22) month. The Ground water analysis results attached herewith 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.	Drilling wastewater including drill cuttings wash water is collected in onsite HDPE lined pit, after that at treatment site it is stored in RCC pit and treated through Drilling Waste Processing Plant. Membership Certificate has been obtained from West Bengal Waste Management Limited, Haldia, for using TSDF facility for hazardous waste disposal. (A copy of the membership certificate attached herewith as **Annexure VI**). The drill cuttings analysis revealed the absence of any hazardous content. Drill cutting is disposed at onsite disposal facilities. The onsite disposal process is communicated to WBPCB. (A copy of the letter is attached with earlier compliance report). .
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.	Water based mud drilling is carried out. Drilling mud is recycled and reused for further drilling. We are in comply with the Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. Oil contaminated waste, waste filters and silica gel have been sent to TSDF facility, Saltora. Used oil has also been sent to the authorize recycler through Manifest (Form 10). The copies of Form 10 attached herewith as **Annexure VII**.
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 completed on July'22. It confirmed that in last 7 years, there are no significant land subsidence has been observed. It is being complied at regular basis, started from the year 2012, as compliance of the condition mentioned in Amendment 4 (viii). NIT Durgapur conducted the Land Subsidence Study at

S. No.	EC Conditions	Compliance Status
		CBM Raniganj Block by this year. Please find a copy of the report attached herewith as **Annexure VIII.**
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 drums shall be installed to minimize gaseous emissions during operation.	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 DGMS. • Major facilities like GGS, MCS, Ware House etc. are well equipped with Fire hydrant system • Dry chemical fire extinguishers are available at all well site. • Portable methane gas 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 and operational 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	All the surface facilities including GGS, CGS and SV

S. No.	EC Conditions	Compliance Status
	SV station shall be as per applicable codes and standards, international practices and applicable local regulations.	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 of burial at river crossing and casings at rails, major road crossings should be in conformity with ANSI/ASME requirements.	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.
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

S. No.	EC Conditions	Compliance Status
		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 Preventer (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 fluid logging etc.	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 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 / 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.

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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 as per the approved schedule and records are maintained accordingly.
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&CC 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. Thereafter MoEF&CC granted another EC refer to F. No. J-11011/1491/2011-IA II (I), dated- 26th February, 2013 for total no. of 650 wells, 8 nos. GGS, 1 no. MCS, depth up to 2000 m for proposed production 5 million m3 per day.
xxxvi	All the commitments made to the public during the Public Hearing / Public Consultation meeting held on 26th March, 2010 shall be satisfactorily implemented.	Commitments made during the public hearing are being 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 labor for all construction work. Nonetheless, we are providing all the necessary infrastructure and facilities like porta- cabins, mobile toilets, septic tank & soak pit, 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	We are in comply with the stipulations made by the State Pollution Control Board (SPCB), State Government and statutory bodies.

S. No.	EC Conditions	Compliance Status
	statutory authority.	
ii	No further expansion or modification in the project shall be carried out without prior approval of the Ministry of Environment & Forests. In case of deviations or alterations in the project proposal from those submitted to this Ministry for clearance, a fresh reference shall be made to the Ministry to assess the adequacy of conditions imposed and to add additional environmental protection measures required, if any	For any further expansion and modification in project configuration, we would approach to MoEF&CC for the prior Environmental Clearance.
iii	The project authorities must strictly comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. Prior approvals from Chief Inspectorate of Factories, Chief Controller of Explosives, Fire Safety Inspectorate etc. must be obtained, wherever applicable.	We are in comply with the rules and regulations under Manufacture, Storage and Import of Hazardous Chemicals Rules, 2000 as amended subsequently. Prior 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 are in comply with the rules and regulations with regard to handling and disposal of Hazardous and Other Wastes (Management and Transboundary Movement) Rules, 2016. Authorization from the West Bengal Pollution Control Board has been obtained and valid till October- 2023. The copy of the same was already enclosed 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)	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**.

S. No.	EC Conditions	Compliance Status
	and 70 dBA (nighttime).	
vi	A separate Environmental Management Cell equipped with full-fledged laboratory facilities must be set up to carry out the environmental management and monitoring functions.	A dedicated environment management cell is functional for implementing the environment management plan at large. The sampling and analysis of environmental parameters is being carried out by M/s Scientific Research laboratory, Kolkata (MoEF&CC recognized and NABL accredited).
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 schedule for all the conditions stipulated herein. The funds so provided shall not be diverted for any other purposes.	Proposed Rs. 7.80 Crore earmarked for environment pollution control measures is being utilized judiciously. The expenditure towards environmental activities for the period of April'22 to Septembetr'22 is attached as **Annexure IX**.
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&CC..
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 reports is being uploaded on company's

S. No.	EC Conditions	Compliance Status
	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.	website & sent to Regional Office of the MOEF&CC, and the WBPCB at regular intervals. The ambient air quality monitoring is carried out as per revised NAAQM criteria. The criteria pollutant levels namely; SPM, RSPM, SO_2, NOx, HC (Methane & Non-methane), VOCs are monitored and stack emission also 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 of the stipulated environmental conditions including results of monitored data (both in hard copies as well as by e-mail) to the Regional Office of MOEF, the respective Zonal Office of CPCB and the WBPCB. The Regional Office of this Ministry /CPCB / WBPCB shall monitor the stipulated conditions.	We are submitting the six monthly compliance reports on the status of the compliance of the stipulated environmental conditions included with the results of environmental monitoring (both in hard copies and through 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 Environment Statement (Form V) attached herewith as **Annexure X.**

S. No.	EC Conditions	Compliance Status
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 Anandabazar Patrika 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 closure and final approval of the project by the concerned authorities and the date of commencing the land development work	Financial closure has been prepared in the year of 2010. The development work was commenced on 7th Dec, 2011 after obtaining consent to establish from WBPCB.

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 up to a depth of 1000m. No additional wells/support well shall be drilled without prior permission of this Ministry.	4 supporting wells have been drilled at each pilot-cum-production wells (Out of 58x4=232 wells, total 158 wells drilled under this clearance.). No additional wells will be drilled without prior approval from MoEF.
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 has been carried out in pre-monsoon. Please find the monitoring results attached with this report as **Annexure XI**.
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 & Development Department, Govt. of West Bengal. (A copy of the letter has been submitted with the 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. At present EOGEPL approaching to zero flaring, April'22 to September'22 we achieved <1% flaring that is a part of technical flaring.

S. No.	EC Conditions	Compliance Status
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 **(Refer to Annexure II**).
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 with 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 completed on July'22. It has been started from the year 2012 and happening regularly as compliance of the condition mentioned in Amendment 4 (viii). In the last 7 years, no significant land subsidence has been observed. . NIT Durgapur conducted the Land Subsidence Study at CBM Raniganj Block by this year. Refer to **Annexure VIII.**
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	We are in comply with valid CTE and CTO from

S. No.	EC Conditions	Compliance Status
	proposal shall be obtained from the W.B. Pollution Control Board	WBPCB.
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&CC.

ANNEXURE I

Name of Location			MCS						GGS- 01					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	35.94	33.65	31.12	20.74	19.53	26.34	37.26	35.59	35.02	15.81	15.19	20.28
PM 10	µg/m^3	100	77.88	73.79	64.83	50.86	56.27	65.98	79.19	71.87	70.13	59.88	57.90	58.68
Nitrogen Dioxide	µg/m^3	80	40.83	38.74	4.63	29.69	28.75	28.01	40.52	39.51	5.07	30.82	28.15	27.94
Sulphur Dioxide	µg/m^3	80	5.39	5.29	36.68	4.04	4.14	4.44	5.32	5.32	35.85	4.85	4.90	4.56
Carbon Monoxide	mg/m^3	2	0.458	0.436	0.398	0.384	0.374	0.364	0.432	0.418	0.398	0.368	0.348	0.362
Hydrocarbon	mg/m^3	NIL	1.57	1.55	1.48	1.26	1.09	1.58	1.59	1.52	1.65	1.36	1.17	1.45
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			3.14			2.56			3.09			2.51	
Benzo(a)Pyrene	ng/m^3	1		0.35			0.26			0.36			0.28	
Ammonia	µg/m^3	400		30.59			25.39			31.08			26.11	
Ozone	µg/m^3	180		40.83			36.88			39.96			37.04	
Lead	µg/m^3	1		0.14			0.09			0.13			0.11	
Nickel	ng/m^3	20		15.51			9.24			14.96			9.52	
Arsenic	ng/m^3	6		1.74			1.15			1.77			1.16	
Benzene	µg/m^3	5		1.69			1.21			1.63			1.19	

ANNEXURE I

Name of Location			GGS- 02						PARULIA					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	34.41	42.70	31.98	27.75	20.43	17.31	44.37	31.82	26.30	22.10	16.47	16.43
PM 10	$\mu g/m^3$	100	72.65	81.34	63.77	64.09	69.37	53.58	85.63	70.37	58.92	62.12	58.16	47.34
Nitrogen Dioxide	$\mu g/m^3$	80	40.53	41.31	4.51	32.92	30.47	28.25	39.63	37.56	4.65	32.74	31.48	26.26
Sulphur Dioxide	$\mu g/m^3$	80	5.24	5.48	35.25	4.84	4.56	4.39	5.52	5.82	34.90	4.72	4.52	4.24
Carbon Monoxide	mg/m^3	2	0.462	0.428	0.388	0.374	0.364	0.352	0.484	0.436	0.402	0.399	0.368	0.362
Hydrocarbon	mg/m^3	NIL	1.44	1.71	1.38	1.50	1.42	1.28	1.72	1.49	1.27	1.45	1.14	1.08
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			3.26			3.05			3.09			2.54	
Benzo(a)Pyrene	ng/m^3	1		0.47			0.41			0.34			0.27	
Ammonia	$\mu g/m^3$	400		32.78			30.96			30.05			28.33	
Ozone	$\mu g/m^3$	180		43.89			41.73			39.02			38.96	
Lead	$\mu g/m^3$	1		0.19			0.15			0.13			0.12	
Nickel	ng/m^3	20		17.04			10.26			14.72			8.81	
Arsenic	ng/m^3	6		1.85			1.54			1.75			1.21	
Benzene	$\mu g/m^3$	5		1.89			1.62			1.67			1.25	

ANNEXURE I

Name of Location			SARASWATIGUNJ						PRATPPUR					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	34.68	44.62	33.11	18.87	22.21	22.66	41.56	42.28	31.96	28.57	15.94	18.64
PM 10	µg/m^3	100	74.11	83.63	68.09	48.73	62.59	57.10	81.06	80.02	60.53	68.23	55.37	54.07
Nitrogen Dioxide	µg/m^3	80	40.27	39.65	4.84	31.78	31.73	30.08	40.61	40.51	4.83	32.85	30.39	26.60
Sulphur Dioxide	µg/m^3	80	5.31	5.65	38.12	4.22	4.77	4.40	5.76	5.46	35.55	4.63	4.82	4.52
Carbon Monoxide	mg/m^3	2	0.438	0.436	0.408	0.368	0.354	0.356	0.502	0.484	0.418	0.402	0.374	0.362
Hydrocarbon	mg/m^3	NIL	1.51	1.76	1.58	1.17	1.21	1.38	1.60	1.69	1.35	1.67	1.07	1.30
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			3.45			2.77			3.21			2.44	
Benzo(a)Pyrene	ng/m^3	1		0.52			0.32			0.45			0.24	
Ammonia	µg/m^3	400		34.61			28.64			33.07			24.98	
Ozone	µg/m^3	180		45.23			39.68			43.02			36.37	
Lead	µg/m^3	1		0.22			0.11			0.18			0.08	
Nickel	ng/m^3	20		19.43			9.45			17.33			9.39	
Arsenic	ng/m^3	6		1.93			1.27			1.83			1.07	
Benzene	µg/m^3	5		1.97			1.35			1.86			1.12	

ANNEXURE I

Name of Location			BANSIA						JAMGORA					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	$\mu g/m^3$	60	32.30	36.61	26.63	20.97	18.89	17.81	41.70	37.28	27.57	27.48	19.47	17.35
PM 10	$\mu g/m^3$	100	74.90	76.49	62.92	52.75	53.27	52.96	83.45	73.38	66.74	64.14	59.69	52.96
Nitrogen Dioxide	$\mu g/m^3$	80	40.55	39.42	4.64	30.91	29.22	27.70	41.02	38.94	4.99	33.29	29.68	29.78
Sulphur Dioxide	$\mu g/m^3$	80	5.31	5.58	33.86	4.25	4.28	4.43	5.56	5.20	36.79	4.70	4.84	4.86
Carbon Monoxide	mg/m^3	2	0.464	0.434	0.410	0.348	0.366	0.346	0.462	0.434	0.388	0.412	0.392	0.352
Hydrocarbon	mg/m^3	NIL	1.49	1.62	1.41	1.31	1.01	1.19	1.68	1.57	1.55	1.53	1.23	1.22
Mercury	mg/m^3			< 0.002			< 0.002			< 0.002			< 0.002	
Hydrocarbon as Non Methane	mg/m^3	NIL	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003	< 0.003
VOC's	$\mu g/m^3$			3.07			2.37			2.97			2.59	
Benzo(a)Pyrene	ng/m^3	1		0.41			0.23			0.38			0.31	
Ammonia	$\mu g/m^3$	400		31.65			24.09			31.97			29.17	
Ozone	$\mu g/m^3$	180		40.94			35.74			42.55			39.06	
Lead	$\mu g/m^3$	1		0.15			0.07			0.15			0.13	
Nickel	ng/m^3	20		15.78			8.18			16.07			9.03	
Arsenic	ng/m^3	6		1.79			1.01			1.82			1.25	
Benzene	$\mu g/m^3$	5		1.75			1.04			1.70			1.33	

ANNEXURE I

Name of Location			KULDIHA						JATGORIA					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	39.98	32.60	35.16	24.16	20.43	24.61	40.31	35.32	30.83	23.79	21.23	26.32
PM 10	µg/m^3	100	83.08	68.53	71.32	65.33	60.93	63.54	81.10	78.95	66.18	58.75	73.62	68.54
Nitrogen Dioxide	µg/m^3	80	41.47	39.40	5.03	35.66	30.36	27.59	41.45	40.76	4.70	33.58	30.93	28.24
Sulphur Dioxide	µg/m^3	80	5.59	5.56	37.76	4.70	4.82	4.50	5.15	5.48	36.71	4.51	4.31	4.56
Carbon Monoxide	mg/m^3	2	0.452	0.422	0.422	0.374	0.361	0.348	0.488	0.438	0.384	0.402	0.358	0.352
Hydrocarbon	mg/m^3	NIL	1.66	1.47	1.69	1.58	1.14	1.53	1.62	1.66	1.53	1.35	1.62	1.61
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			3.03			2.61			3.18			3.29	
Benzo(a)Pyrene	ng/m^3	1		0.33			0.29			0.39			0.52	
Ammonia	µg/m^3	400		28.71			27.02			32.56			34.65	
Ozone	µg/m^3	180		39.57			38.44			42.13			45.24	
Lead	µg/m^3	1		0.12			0.09			0.17			0.21	
Nickel	ng/m^3	20		14.03			9.16			16.89			10.64	
Arsenic	ng/m^3	6		1.68			1.19			1.73			1.72	
Benzene	µg/m^3	5		1.65			1.28			1.84			1.81	

ANNEXURE I

Name of Location			Gopalpur Warehouse						KANTABERIA					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	44.89	35.93	31.94	22.91	18.17	25.09	42.22	42.75	30.38	26.45	27.19	27.28
PM 10	µg/m^3	100	82.80	74.92	64.08	63.57	54.72	62.14	84.98	82.87	60.24	62.39	71.11	72.94
Nitrogen Dioxide	µg/m^3	80	40.26	40.79	4.51	34.67	29.81	28.20	40.57	41.73	4.49	32.25	31.90	28.63
Sulphur Dioxide	µg/m^3	80	5.24	5.34	35.20	4.91	4.25	4.25	5.04	5.76	35.34	4.47	4.50	4.67
Carbon Monoxide	mg/m^3	2	0.492	0.432	0.402	0.384	0.348	0.338	0.474	0.422	0.406	0.394	0.362	0.348
Hydrocarbon	mg/m^3	NIL	1.63	1.59	1.44	1.48	1.03	1.49	1.69	1.73	1.32	1.41	1.54	1.67
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			3.11			2.49			3.31			3.17	
Benzo(a)Pyrene	ng/m^3	1		0.37			0.25			0.48			0.48	
Ammonia	µg/m^3	400		30.88			24.71			33.82			32.37	
Ozone	µg/m^3	180		40.15			36.15			44.07			43.29	
Lead	µg/m^3	1		0.14			0.08			0.21			0.18	
Nickel	ng/m^3	20		15.06			8.97			18.52			11.07	
Arsenic	ng/m^3	6		1.76			1.02			1.88			1.60	
Benzene	µg/m^3	5		1.71			1.16			1.94			1.73	

ANNEXURE I

Name of Location			NACHAN						SARENGA					
Month			Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22	Apr.'22	May.'22	June'22	Jul.'22	Aug.'22	Sep.'22
Parameter	UoM	NAAQS LIMIT												
PM 2.5	µg/m^3	60	39.39	31.22	31.30	22.29	22.06	19.13	37.21	34.23	25.82	18.86	19.65	16.84
PM 10	µg/m^3	100	76.72	68.72	67.34	60.86	65.32	55.26	77.43	78.21	56.84	50.04	57.35	51.20
Nitrogen Dioxide	µg/m^3	80	40.76	39.01	4.38	32.64	30.52	29.01	41.83	39.21	4.81	30.24	29.25	27.57
Sulphur Dioxide	µg/m^3	80	5.34	5.51	34.67	4.55	4.54	4.64	5.60	5.27	33.32	4.10	4.07	4.82
Carbon Monoxide	mg/m^3	2	0.485	0.442	0.402	0.394	0.348	0.346	0.496	0.472	0.422	0.352	0.352	0.348
Hydrocarbon	mg/m^3	NIL	1.54	1.43	1.61	1.39	1.33	1.33	1.58	1.63	1.22	1.23	1.12	1.14
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			2.89			2.83			3.15			2.46	
Benzo(a)Pyrene	ng/m^3	1		0.31			0.35			0.43			0.30	
Ammonia	µg/m^3	400		29.08			29.51			32.18			25.72	
Ozone	µg/m^3	180		38.81			40.12			41.76			37.95	
Lead	µg/m^3	1		0.11			0.13			0.16			0.10	
Nickel	ng/m^3	20		13.56			10.79			16.24			9.76	
Arsenic	ng/m^3	6		1.71			1.32			1.80			1.13	
Benzene	µg/m^3	5		1.62			1.47			1.82			1.17	

ANNEXURE II

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

Compliance Period: April'22 to September'22

Ambient Noise Monitoring Result				
Location	**DAY TIME**		**NIGHT TIME**	
	Permissible Limit as per CPCB in dBA	**Noise Level (Leq) dBA**	**Permissible Limit as per CPCB in dBA**	**Noise Level (Leq) dBA**
KULDIHA	75	51.93	70	46.55
MCS-MALANDIGHI	75	62.11	70	57.60
AKANDARA	75	68.64	70	60.20
SARASWATIGUNJ	75	68.21	70	60.25
KHATGORIA	75	71.59	70	67.37
JAMGORA	75	69.20	70	55.82
KANTABERIA	75	65.58	70	68.07
JATGORIA	75	64.91	70	61.8
NACHAN	75	57.16	70	45.06
PARULIA	75	51.06	70	48.65
GOPALPUR WARE HOUSE	75	58.10	70	48.65
PRATAPPUR	75	57.87	70	51.57
SARENGA	75	52.10	70	48.12
BNSIA	75	52.09	70	44.04

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Apr.'22 -Sep.'22)

ANNEXURE III

MONTH					Apr.'22						May'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-20 D2 (Jambon)	EDD-20 D3 (Jambon)	EDD-015-D3 (Bargoria)	EDD-404-D2 (Kalikapur)	EDC-072-D2 (Parulia)	EDH-052-D3 (Nachan)	EDN-184 D2 (Monerkonda)	EDE-043-D1 (Jhatgoria)	EDE-043-V1 (Jhatgoria)	EDD-429-D2 (Jambon)	EDD-406-D2 (Jambon)	EDE-403-D1 (Jhatgoria)
1	pH		5.5 to 9.0	5.5-9.0	6.69	6.75	6.91	6.54	6.65	6.87	7.80	8.42	8.37	8.40	8.36	8.51
2	Temperature			40 deg	35.1°C	32.4°C	36.0°C	34.4°C	33.5°C	34.3°C	35.0°C	36.3°C	37.3°C	38.9°C	36.2°C	35.8°C
3	Total Suspended Solids	mg/l	100	100	<2	7.0	5.0	112.0	46.0	16.0	85	22	8	<2	<2	2
4	Total Dissolved Solids	mg/l	---	2100	2780.0	4932.0	3112.0	2642.0	3204.0	2238.0	1148	1822	1278	810	716	916
5	Chloride	mg/l	---	600	1102.0	2020.0	1248.0	1038.0	1287.0	871.0	415	580	475	108	117	112
6	Total Hardness	mg/l	---	1000	45.0	163.0	35.0	66.0	104.0	56.0	58	40	30	22	26	20
7	Sulphate	mg/l	---	1000	6.8	7.5	5.9	5.2	6.3	4.9	5.20	6.50	4.5	4.10	<2.5	<2.5
8	Calcium	mg/l		100	10.0	42.0	8.0	15.0	25.0	12.0	13.0	8.0	7	5.0	6	4
9	Magnesium	mg/l	---	10	5.0	14.0	3.0	7.0	10.0	6.0	6	4	3	2	2.0	2
10	Dissolved Oxygen	mg/l		1.2	4.8	3.9	4.2	5.3	3.7	4.7	3.3	4.5	5.1	4.9	5.3	4
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	2	<2	<2	<2	<2	2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	8.0	<8	<8	<8	<8	10.0	8.0	<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	<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	<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	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.48	2.2	1.05	1.86	2.3	1.20	0.98	1.06	1.8	0.85	0.6	0.58
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.018	0.022	0.015	0.022	0.029	0.018	0.019	0.026	0.021	0.011	<0.01	<0.01
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			744	1037	952	695	866	647	397	1101	422	538	523	774
24	Sodium	mg/l	---		1210	2150	1345	1160	1370	935	490	648	534	405	310	398
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<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	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	.....	.....												
28	Lithium	mg/l	.....	.....												
29	Molybdenum	mg/l	.....	.....												
30	Palladium	mg/l	.....	.....												
31	Selenium	mg/l	0.05	.....												
32	Vanadium	mg/l	0.2	.....												
33	Cadmium	mg/l	2.0	.....												
34	Cobalt	mg/l	.....	.....												

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Apr.'22 -Sep.'22)

ANNEXURE III

MONTH					May'22								June'22			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-404-D4 (Kalikapur)	EDD-407-D1 (Jambon)	EDC-072-D2 (Parulia)	EDD-052-D3 (Nachan)	EDD-020-V1 (Jambon)	EDD-009-D3 (Bargoria)	EDD-403-D5 (Bargoria)	EDD-015-D5 (Bargoria)	EDN-184 D4 (GOPALPUR)	EDN-174 (DHOWADANGA)	ED1-162-D5 (BHALUKONDA)	EDI-115-V1 (SARASWATIGUNJ)
1	pH		5.5 to 9.0	5.5-9.0	8.58	8.6	8.38	8.61	8.59	8.43	8.40	8.48	8.40	8.35	7.4	8.55
2	Temperature			40 deg	35.5°C	37.6°C	35.7°C	36.7°C	36.7°C	38.2°C	36.8°C	33.8°C	39.5°C	38.7°C	37.7°C	36.4°C
3	Total Suspended Solids	mg/l	100	100	12	4	45	36	14	<2	<2	<2	<2	<2	43	58
4	Total Dissolved Solids	mg/l	---	2100	1832	1224	3246	2892	2722	1632	1224	1568	1140	3094	624	1682
5	Chloride	mg/l	---	600	365	265.00	1260.00	940	988	238	265	310	462	1220	220	664
6	Total Hardness	mg/l	---	1000	40	26	132	60	32	13	10	13	55	141	24	78
7	Sulphate	mg/l	---	1000	<2.5	<2.5	5.8	<2.5	<2.5	4.5	3.8	4.6	4.80	5.30	3	5.90
8	Calcium	mg/l		100	9.0	5.0	32.0	15	8	3.0	2.0	4.0	13.0	31.0	6	19.0
9	Magnesium	mg/l	---	10	3	3	12	5	3	1.0	1.0	1.0	6	15	2	8
10	Dissolved Oxygen	mg/l		1.2	3.7	4.8	5.1	4.3	4.1	3.9	4.7	4.0	4.3	4.9	3.7	4.9
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	9.0	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	<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	<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	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	0.65	0.48	1.48	2.6	1.65	2.49	2.15	2.64	2.2	2.65	1.08	0.95
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.019	0.014	0.011	0.025	0.018	0.013	0.016	0.020	0.011	0.019	<0.01	0.023
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			1417	1035	1056	1830	1387	1498	995	1382	251	444	130	628
24	Sodium	mg/l	---		740	425	1385	982	1010	625	430	550	510	1365	298	725
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<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	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	.....	.....									<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l	.....	.....									<0.1	<0.1	<0.1	<0.1
29	Molybdenum	mg/l	.....	.....									<0.05	<0.05	<0.05	<0.05
30	Palladium	mg/l	.....	.....									<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l	0.05	.....									<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	0.2	.....									<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l	2.0	.....									<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: Apr.'22 -Sep.'22)

ANNEXURE III

MONTH					June'22								July'22			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-022-D3 (GOPEDANGA)	EDD-03-D2 (BANGORIA)	EDD-07-D1 (BANGORIA)	EDD-401-D1 (KHATGORIA)	EDG-077-DG (KAMALPUR)	EDG-075-V1 (PARULIA)	EDP-406-D3 (JAMGORA)	EDP-429-D1 (JAMGORA)	EDI-039-D3 (SWARASWATIGUNJ)	EDI-032-D1 (AKANDARA)	EDD-052-D5 (PRATAPPUR)	EDG-074-D2 (PARULIA)
1	pH		5.5 to 9.0	5.5-9.0	8.62	8.71	8.78	8.73	8.81	8.47	8.57	8.64	8.8	8.48	8.56	8.60
2	Temperature			40 deg	34.2°C	36.6°C	36.2°C	36.3°C	35.1°C	35.1°C	34.6°C	36.7°C	37.4°C	37.5°C	37.8°C	38.1°C
3	Total Suspended Solids	mg/l	100	100	4	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	2042	2374	1248	1194	242	2038	894	904	4982	4968	2872	2610
5	Chloride	mg/l	---	600	316	470	207	224	760	611	211	193	2113	2265	604	515
6	Total Hardness	mg/l	---	1000	55	39	24	35	43	43	31	47	110	129	98	67
7	Sulphate	mg/l	---	1000	4.8	4.2	6.5	4.10	7.3	4.9	3.0	3.8	5.1	5.90	4.3	6.8
8	Calcium	mg/l		100	14	8	6	8.0	11.0	9	8	14	24	35.0	22	14
9	Magnesium	mg/l	---	10	5.0	5.0	2	4	4	5	3	3	12	10	10.0	8.0
10	Dissolved Oxygen	mg/l		1.2	4.5	5.5	5.1	5.6	4.7	6.1	5.5	5.9	4.5	2.9	4.3	4.8
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8	<8	<8	9.0	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	<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	<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	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.65	1.90	0.82	0.96	1.88	1.75	0.48	0.57	2.75	3.2	1.8	1.61
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.017	<0.01	0.015	0.012	0.022	0.017	0.010	0.013	0.025	0.024	0.019	0.033
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			1696	1817	986	894	1367	1092	527	542	1851	1250	1964	1979
24	Sodium	mg/l	---		840	980	530	508	1080	845	382	398	1860	2020	1170	1046
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<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	<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	.....	.....	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
29	Molybdenum	mg/l	.....	.....	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05				
30	Palladium	mg/l	.....	.....	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5				
31	Selenium	mg/l	0.05	.....	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005				
32	Vanadium	mg/l	0.2	.....	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1				
33	Cadmium	mg/l	2.0	.....	<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: Apr.'22 -Sep.'22)

ANNEXURE III

MONTH					July'22								Aug.'22			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-053-D3 (NACHAN)	EDC-411-D1 (BANSIA)	EDD-407-D1 (JAMGORA)	EDP-429-D2 (JAMGORA)	EDD-401-D3 (KHATGORIA)	EDD-003-D6 (BARGORIA)	EDI-038 D2 (SARASWATIGUNJ)	EDI-042 D2 (GHATAKDANGA)	EDG-077-D1 (KAMALPUR)	EDG-075-D1 (PARULIA)	EDG-075-V1 (PARULIA)	EDG-074-D3 (PARULIA)
1	pH		5.5 to 9.0	5.5-9.0	8.95	8.70	8.52	8.62	8.65	8.92	8.65	8.05	8.49	8.40	8.45	8.39
2	Temperature			40 deg	40.4°C	39.7°C	39.5°C	38.2°C	37.8°C	38.1°C	37.6°C	35.9°C	37.2°C	38.7°C	39.2°C	37.9°C
3	Total Suspended Solids	mg/l	100	100	3	<2	<2	<2	<2	<2	4	10	<2	3	2	<2
4	Total Dissolved Solids	mg/l	---	2100	2670	1398	1246	784	1270	2372	5028	5934	1678	1692	1982	2634
5	Chloride	mg/l	---	600	627	214	181	242	265	353	1435	2810	494	508	544	640
6	Total Hardness	mg/l	---	1000	63	67	59	59	63	59	125	318	58	74	62	66
7	Sulphate	mg/l	---	1000	3.5	<2.5	<2.5	<2.5	3.5	5.7	6.20	7.30	4.8	5.7	4.0	4.1
8	Calcium	mg/l		100	14	16.0	16.0	13	17	16	31.0	75.0	14	17.0	16	19
9	Magnesium	mg/l	---	10	7	7	5	7	4	5	11	31	6	8	6.0	5
10	Dissolved Oxygen	mg/l		1.2	3.9	4.2	5.3	5.2	5.7	5.0	4.9	3.1	4.7	4.1	3.8	5.8
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	8.0	9.0	<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	<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	<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	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.2	0.85	1.55	1.95	2.3	2.11	2.9	3.1	1.1	0.78	1.65	0.84
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.025	0.018	0.012	0.012	0.021	0.270	0.029	0.037	0.018	0.027	0.022	0.033
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			1789	1131	1051	421	928	1581	1316	402	1040	1060	1153	1769
24	Sodium	mg/l	---		1145	580	470	305	520	1190	2765	2640	622	638	810	1080
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<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	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	.....	.....												
28	Lithium	mg/l	.....	.....												
29	Molybdenum	mg/l	.....	.....												
30	Palladium	mg/l	.....	.....												
31	Selenium	mg/l	0.05	.....												
32	Vanadium	mg/l	0.2	.....												
33	Cadmium	mg/l	2.0	.....												
34	Cobalt	mg/l	.....	.....												

Produced Water Analysis Report of CBM Raniganj Project of Essar Oil and Gas Exploration and Production Limited
(Compliance Period: Apr.'22 -Sep.'22)

ANNEXURE III

MONTH					Aug.'22								Sep.'22			
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-405-D5 (KALIKAPUR)	EDD-406-D2 (JAMGORA)	EDD-022-D1 (GOPEDANGA)	EDD-022-D3 (GOPEDANGA)	EDD-022-D2 (GOPEDANGA)	EDD-031-D1 (DHABANI)	EDN-162 D7 (BHALUKONDA)	EDN-162 D4 (BHALUKONDA)	EDI-115-V1 (SARASWATIGUNJ)	EDI-038-D2 (SARASWATIGUNJ)	EDH#064-Labnapara Raw Water	EDN-184 D4 (GOPALPUR)
1	pH		5.5 to 9.0	5.5-9.0	8.53	8.48	8.43	8.49	8.45	8.51	8.36	8.41	7.88	7.91	7.88	7.68
2	Temperature			40 deg	40.7°C	40.1°C	39.2°C	38.1°C	37.3°C	39.8°C	39.3°C	42.4°C	33.9°C	28.1°C	30.1°C	34.5°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	<2	6	42	54	11	<2	54	<2
4	Total Dissolved Solids	mg/l	---	2100	1510	680	1756	1826	2218	3766	8044	12410	1948	6120	3768	1032
5	Chloride	mg/l	---	600	279	197	284	183	325	1308	3782	6823	627	3027	1674	471
6	Total Hardness	mg/l	---	1000	62	50	93	58	66	116	590	760	63	162	121	66
7	Sulphate	mg/l	---	1000	<2.5	<2.5	4.1	3.5	4.9	6.5	7.9	8.80	4.9	7.2	5.40	<2.5
8	Calcium	mg/l		100	14	12	22	16	17	28	173	221	16	41	30.0	13
9	Magnesium	mg/l	---	10	7	5	9	5	6	11	39	51	5	14	12	8.0
10	Dissolved Oxygen	mg/l		1.2	4.3	5.2	5.0	4.3	4.0	4.8	3.9	3.3	4.9	5.6	3.3	5.1
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	2	3	<2	<2	7	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	10	12	8.0	<8	28.0	<8
13	Oil & Grease	mg/l	10	10	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	8.0	<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	<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	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	1.13	0.95	1.4	1.93	2.05	2.6	2.95	3.11	1.45	2.55	1.98	0.65
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.019	0.014	0.013	0.021	0.035	0.023	0.029	0.018	0.019	0.029	0.022	0.013
19	Copper	mg/l	---	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			1129	340	1365	1656	1794	1553	99	198	757	1374	1220	299
24	Sodium	mg/l	---		634	275	750	778	965	1640	3940	4565	898	2375	1432	374
25	Cyanide	mg/l	0.2	0.2	<0.02	<0.02	<0.02	<0.02	<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	<0.01	<0.01	<0.01	<0.01
27	Aluminium	mg/l	.....	.....									<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l	.....	.....									<0.1	<0.1	<0.1	<0.1
29	Molybdenum	mg/l	.....	.....									<0.05	<0.05	<0.05	<0.05
30	Palladium	mg/l	.....	.....									<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l	0.05	.....									<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	0.2	.....									<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l	2.0	.....									<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: Apr.'22 -Sep.'22)

ANNEXURE III

MONTH					Sep.'22								
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDD-052-D5 (NACHAN)	EDD-008-D2 (JAMBON)	EDD-008-V1 (JAMBON)	EDD-404-D2 (KALIKAPUR)	EDD-017-D6 (KALIKAPUR)	EDD-049-D2 (PRATAPPUR)	EDD-053-D5 (NACHAN)	EDG-075-V1 (PARULIA)	EDG-077-D1 (PARULIA)
1	pH		5.5 to 9.0	5.5-9.0	7.75	8.58	8.51	8.1	8.62	8.41	7.96	7.70	8.43
2	Temperature			40 deg	35.2°C	32.8°C	32.9°C	32.5°C	31.7°C	32.7°C	31.6°C	34.2°C	35.1°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	8	<2	6	14	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	3056	2580	2692	1856	3118	3986	4898	2032	1582
5	Chloride	mg/l	---	600	858	519	608	316	835	1278	1627	533	410
6	Total Hardness	mg/l	---	1000	63	55	70	48	59	74	48	44	59
7	Sulphate	mg/l	---	1000	6.1	4.7	5.80	5	6.2	7.5	8.0	4.2	3.8
8	Calcium	mg/l		100	18	15	16.0	10.0	13	21	12	12	13
9	Magnesium	mg/l	---	10	4.0	4	7	5	6	5	4	4	6
10	Dissolved Oxygen	mg/l		1.2	4.3	5.6	4.8	5.1	5.0	4.7	3.1	4.2	5.7
11	BOD, 3 Days at 27ºC	mg/l	30	30	<2	<2	<2	<2	<2	<2	8	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	8.0	<8	<8	35.0	<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	<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	<0.002
15	Sulphide	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluoride	mg/l	2	1.5	2.05	1.3	0.86	1.1	1.6	2.33	2.68	0.83	0.77
17	Total Chromium	mg/l	2	0.1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	0.1	0.026	0.018	0.022	0.029	0.018	0.027	0.032	0.015	0.022
19	Copper	mg/l	---	0.2	<0.05	<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	<0.05
21	Lead	mg/l		0.1	<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	<0.001
23	Bicarbonate	mg/l			2125	1882	1877	1458	1941	2081	2479	1289	1001
24	Sodium	mg/l	---		1085	1158	1245	790	1281	1625	2015	838	648
25	Cyanide	mg/l	0.2	0.2	<0.02	<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	<0.01
27	Aluminium	mg/l	.....	.....	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l	.....	.....	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Molybdenum	mg/l	.....	.....	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
30	Palladium	mg/l	.....	.....	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
31	Selenium	mg/l	0.05	.....	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
32	Vanadium	mg/l	0.2	.....	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
33	Cadmium	mg/l	2.0	.....	<0.02	<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	<0.1

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Apr.'22 to Sep.'22)

ANNEXURE IV

Date					Apr.'22						Apr.'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-01 RO			EDD-50 RO			EDH-64 RO			EDN-99 RO		
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.15	7.40	7.61	6.99	8.10	7.80	6.90	6.75	7.4	7.39	7.95	7.70
2	Temperature	deg C			35.8°C	36.6°C	35.6°C	30.4°C	31.4°C	30.3°C	30.1°C	30.1°C	29.1°C	32.1°C	32.6°C	32.4°C
3	Total Suspended Solids	mg/l	100	100	3	<2	5	6	<2	9	4	<2	5	<2	<2	4
4	Total Dissolved Solids	mg/l	---	2100	1656	1352	2394	2782	1024	3278	6466	668	7982	3264	864	5212
5	Chlorides	mg/l	---	600	795.0	615.0	1026.0	1190.0	455.0	1410.0	2986	270	3515	1320.0	380.0	2275.0
6	Total Hardness	mg/l	---	---	63.0	55.0	74.0	94.0	71.0	110.0	180.0	24.0	184.0	208.0	67.0	227.0
7	Sulphates	mg/l	---	1000	4.1	<2.5	4.9	4.9	3	5.5	6.0	3.0	7.2	5.3	<2.5	6.5
8	Calcium	mg/l			19	16	19	24	19	24	49.0	6.0	50.0	57.0	16.0	63.0
9	Magnesium	mg/l	---	---	4.0	4.0	7.0	9.0	6.0	12.0	14.0	2.0	14	16.0	7.0	17.0
10	Dissolved Oxygen	mg/l			4.8	5.30	4.0	4.5	5.9	3.7	5.8	6.0	4.5	4.3	5.0	3.2
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<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	<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	<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	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.35	0.92	1.41	1.75	0.86	1.89	2.2	1.05	2.55	0.85	0.63	1.15
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.013	0.021	0.033	0.019	0.011	0.022	0.016	0.012	0.024	0.022	0.017	0.034
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<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	<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	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			299	256	561	903	275	988	1373	226	1647	1116	214	1318
24	Sodium	mg/l	---	---	676	585	999	1065	397	1325	2810	259	3461	1270	345	2149
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
26	Cyanide	mg/l	0.2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
27	Aluminum	mg/l	---	---												
28	Lithium	mg/l														
29	Molybednum	mg/l	---	---												
30	Palladium	mg/l	---	---												
31	Selenium	mg/l														
32	Vanadium	mg/l	---	---												
33	Cadmium	mg/l														
34	Cobalt	mg/l														

R.O. water analysis report of CBM Raniganj Project of EOGEPL
(Compliance period: Apr.'22 to Sep.'22)

ANNEXURE IV

Date					May'22												June'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-01 RO			EDD-50 RO			EDH-64 RO			EDN-99 RO			GGS-01 RO			EDD-50 RO		
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.25	7.90	7.11	6.75	6.97	7.20	7.33	7.80	6.92	6.60	7.20	6.93	7.23	7.80	7.60	7.08	7.55	6.95
2	Temperature	deg C			34.5°C	34.0°C	34.3°C	34.1°C	35.2°C	33.1°C	32.8°C	35.1°C	32.9°C	35.3°C	36.1°C	35.1°C	34.4°C	34.5°C	35.7°C	34.2°C	36.2°C	32.9°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	<2	<2	4	<2	6	5	<2	9	3	<2	4	<2	<2	3
4	Total Dissolved Solids	mg/l	---	2100	2476	930	4508	3026	802	4536	6206	770	11612	5128	1124	9122	1990	798	4498	2214	1042	3048
5	Chlorides	mg/l	---	600	945	370	1968	1140	296	1896	2612	255	4860	2015	435	3260	735	290	1910	830	415	1178
6	Total Hardness	mg/l	---	---	27.0	50.0	50.0	35.0	19.0	50.0	138.0	40.0	211.0	227	52	374	51.0	39.0	67.0	63.0	47.0	78.0
7	Sulphates	mg/l	---	1000	4.3	<2.5	5.8	6.3	4.0	7.2	6.9	4.3	7.9	7.0	4.8	9.1	5.2	<2.5	6.3	4.8	3.0	5.9
8	Calcium	mg/l			6	12	11	9	5	13	38.0	9.0	58	62.0	12.0	79.0	13.0	11.0	17.0	14.0	13.0	17.0
9	Magnesium	mg/l	---	---	3.0	5.0	6.0	3.0	2.0	4.0	11.0	4.0	16.0	17.0	5.0	43.0	5.0	3.0	6.0	7.0	4.0	9.0
10	Dissolved Oxygen	mg/l			4.1	4.90	3.7	3.5	4.8	3.2	3.5	5.9	3.0	4.3	5.9	3.7	5.1	5.9	4.6	4.8	5.0	4.1
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<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	<5.0	<5.0	<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	<0.002	<0.002	<0.002	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	0.95	0.5	1.12	1.3	0.73	1.53	1.65	0.95	2.2	1.95	1.1	2.70	0.93	0.42	1.05	1.33	0.62	1.45
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.015	<0.01	0.019	0.019	0.012	0.023	0.021	0.019	0.025	0.015	0.011	0.018	0.021	0.013	0.026	0.019	0.011	0.024
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<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	<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	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			830	232	927	1165	256	1287	1418	248	2761	1373	323	2397	744	250	927	829	268	1037
24	Sodium	mg/l	---	---	1070	415	2035	1235	330	1940	2830	305	5170	2240	482	3572	840	360	2070	905	465	1260
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.02	<0.02	<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
28	Lithium	mg/l															<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Molybednum	mg/l	---	---													<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
30	Palladium	mg/l	---	---													<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
32	Vanadium	mg/l	---	---													<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
34	Cobalt	mg/l															<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: Apr.'22 to Sep.'22)

ANNEXURE IV

Date					June'22						July'22											
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-64 RO			EDN-99 RO			GGS-01 RO			EDD-50 RO			EDH-64 RO			EDN-99 RO		
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	6.95	7.80	7.41	7.35	7.62	7.11	7.15	7.40	7.61	6.99	8.10	7.80	6.90	6.75	7.4	7.39	7.95	7.70
2	Temperature	deg C			32.9°C	33.5°C	32.3°C	33.7°C	33.7°C	30.1°C	35.8°C	36.6°C	35.6°C	30.4°C	31.4°C	30.3°C	30.1°C	30.1°C	29.1°C	32.1°C	32.6°C	32.4°C
3	Total Suspended Solids	mg/l	100	100	4	<2	6	4	<2	7	3	<2	5	6	<2	9	4	<2	5	<2	<2	4
4	Total Dissolved Solids	mg/l	---	2100	5792	596	9392	6234	1448	7572	1656	1352	2394	2782	1024	3278	6466	668	7982	3264	864	5212
5	Chlorides	mg/l	---	600	2495	210	4070	2398	509	3018	795.0	615.0	1026.0	1190.0	455.0	1410.0	2986	270	3515	1320.0	380.0	2275.0
6	Total Hardness	mg/l	---	---	184.0	67.0	223.0	372.0	102.0	463.0	63.0	55.0	74.0	94.0	71.0	110.0	180.0	24.0	184.0	208.0	67.0	227.0
7	Sulphates	mg/l	---	1000	7.0	<2.5	8.1	8.6	4.0	9.0	4.1	<2.5	4.9	4.9	3	5.5	6.0	3.0	7.2	5.3	<2.5	6.5
8	Calcium	mg/l			46.0	19.0	55.0	101.0	24.0	115.0	19	16	19	24	19	24	49.0	6.0	50.0	57.0	16.0	63.0
9	Magnesium	mg/l	---	---	17.0	5.0	21.0	30.0	10.0	43.0	4.0	4.0	7.0	9.0	6.0	12.0	14.0	2.0	14	16.0	7.0	17.0
10	Dissolved Oxygen	mg/l			4.2	4.9	3.7	4.7	5.0	3.3	4.8	5.30	4.0	4.5	5.9	3.7	5.8	6.0	4.5	4.3	5.0	3.2
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	<8	<8	<8	<8	<8	<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	<5.0	<5.0	<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	<0.002	<0.002	<0.002	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.6	0.81	1.75	1.85	0.82	1.95	1.35	0.92	1.41	1.75	0.86	1.89	2.2	1.05	2.55	0.85	0.63	1.15
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.030	0.022	0.039	0.019	0.015	0.024	0.013	0.021	0.033	0.019	0.011	0.022	0.016	0.012	0.024	0.022	0.017	0.034
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<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	<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	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			1318	220	1854	2281	464	2574	299	256	561	903	275	988	1373	226	1647	1116	214	1318
24	Sodium	mg/l	---	---	2570	258	4280	2515	612	3125	676	585	999	1065	397	1325	2810	259	3461	1270	345	2149
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.02	<0.02	<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												
28	Lithium	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1												
29	Molybednum	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05												
30	Palladium	mg/l	---	---	<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												
32	Vanadium	mg/l	---	---	<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												
34	Cobalt	mg/l			<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: Apr.'22 to Sep.'22)

ANNEXURE IV

Date					Aug.'22												Sep.'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	GGS-01 RO			EDD-50 RO			EDH-64 RO			EDN-99 RO			GGS-01 RO			EDD-50 RO		
					Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.10	7.35	6.95	6.85	7.30	7.22	7.55	8.10	7.95	7.80	8.15	7.63	8.15	7.78	7.55	7.62	8.10	7.93
2	Temperature	deg C			32.3°C	32.1°C	34.1°C	32.7°C	33.2°C	32.3°C	29.9°C	29.5°C	29.4°C	31.8°C	30.9°C	31.9°C	35.4°C	34.9°C	35.1°C	32.2°C	35.4°C	31.5°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	6	<2	12	4	<2	<2	<2	<2	<2	<2	<2	<2	3	<2	5
4	Total Dissolved Solids	mg/l	---	2100	1896	1362	2938	2256	1128	2794	7494	938	10214	6120	1506	9798	1962	1028	2466	2218	1510	2686
5	Chlorides	mg/l	---	600	815	540	1310	950	439	1170	3060	367	4860	2170	640	4162	810	395	987	810	610	1062
6	Total Hardness	mg/l	---	---	54.0	39.0	62.0	70.0	54.0	85.0	190.0	54.0	268.0	400	81	508	74.0	52.0	81.0	66.0	55.0	70.0
7	Sulphates	mg/l	---	1000	5.0	3.0	5.9	4.8	<2.5	5.5	5.8	3.3	6.2	6.8	3.9	7.4	3.8	<2.5	5.1	4.3	<2.5	5.2
8	Calcium	mg/l			16	9	12	19	14	22	47.0	11.0	62	101.0	17.0	126.0	21.0	15.0	18.0	18.0	10.0	15.0
9	Magnesium	mg/l	---	---	4.0	4.0	8.0	6.0	5.0	8.0	18.0	7.0	27.0	36.0	9.0	47.0	5.0	4.0	9.0	5.0	7.0	8.0
10	Dissolved Oxygen	mg/l			4.7	5.20	3.6	5.1	6.0	4.0	4.9	5.8	3.8	5.4	6.1	5.0	4.1	4.5	3.3	4.0	4.9	3.7
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	3	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	10.0	<8	<8	<8	<8	<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	<5.0	<5.0	<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	<0.002	<0.002	<0.002	<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	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	0.83	0.51	0.92	1.55	0.85	1.68	1.95	0.68	2	1.35	0.70	1.65	1.15	0.95	1.2	0.73	0.48	0.9
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.013	0.010	0.016	0.018	0.012	0.021	0.023	0.017	0.028	0.017	0.011	0.023	0.019	0.019	0.022	0.033	0.028	0.036
19	Copper	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<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	<0.05	<0.05	<0.05	<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	<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	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
23	Bicarbonate	mg/l			354	268	637	543	311	738	1172	220	2306	1543	256	1903	647	207	744	525	525	970
24	Sodium	mg/l	---	---	875	640	1265	985	506	1230	3765	411	3960	2740	710	4480	778	415	1065	895	598	1104
25	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<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	<0.02	<0.02	<0.02	<0.02	<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
28	Lithium	mg/l															<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Molybednum	mg/l	---	---													<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
30	Palladium	mg/l	---	---													<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
32	Vanadium	mg/l	---	---													<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
34	Cobalt	mg/l															<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Date					Sep.'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-64 RO			EDN-99 RO		
					Inlet	Outlet	Reject	Inlet	Outlet	Reject
1	pH		5.5 to 9.0	5.5-9.0	7.91	7.80	7.62	8.08	8.15	8.52
2	Temperature	deg C			29.4°C	31.6°C	29.9°C	29.8°C	30.6°C	31.5°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	<2	<2	<2
4	Total Dissolved Solids	mg/l	---	2100	3392	638	8514	6096	1720	8202
5	Chlorides	mg/l	---	600	1340	215	3496	2360	615	3240
6	Total Hardness	mg/l	---	---	74.0	48.0	140.0	272.0	173.0	280.0
7	Sulphates	mg/l	---	1000	5.8	3.3	6.9	7.3	4.8	8.2
8	Calcium	mg/l			16.0	10.0	31.0	84.0	49.0	78.0
9	Magnesium	mg/l	---	---	8.0	5.0	15.0	15.0	13.0	21.0
10	Dissolved Oxygen	mg/l			3.5	4.7	2.9	4.7	5.9	4.1
11	BOD	mg/l	30	30	<2	<2	<2	<2	<2	<2
12	COD	mg/l	250	100	<8	<8	<8	<8	<8	8.0
13	Oil & Grease	mg/l	10	10	<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
15	Sulphides	mg/l	2	2	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
16	Fluorides	mg/l	2	1.5	1.63	1.5	1.61	1.87	1.7	2.09
17	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
18	Zinc	mg/l	---	---	0.015	0.018	0.021	0.039	0.040	0.043
19	Copper	mg/l	---	---	<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
21	Lead	mg/l			<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	Bicarbonate	mg/l			848	226	1519	2220	494	2416
24	Sodium	mg/l	---	---	1575	287	4165	2495	780	3625
25	Hexavalent Chromium	mg/l	0.1		<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
27	Aluminum	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
28	Lithium	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
29	Molybednum	mg/l	---	---	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
30	Palladium	mg/l	---	---	<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
32	Vanadium	mg/l	---	---	<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
34	Cobalt	mg/l			<0.1	<0.1	<0.1	<0.1	<0.1	<0.1

Date					Apr.'22					
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	Kunur Nala Downstream Near Kuldiha Bridge	EDH-64(Discharge)
1	pH at 27ºC		5.5 to 9.0	5.5-9.0	7.45	7.6	7.7	8.26	7.8	8.21
2	Temperature	Deg C	---	40 deg C	33.4°C	34.9°C	33.4°C	32.4°C	31.2°C	29.6°C
3	Total Suspended Solids	mg/l	100	100	3	<2	<2	5	9	<2
4	Total Dissolved Solids	mg/l	---	2100	958	1128	1904	1396	1058	1342
5	Acidity as CaCO3	mg/l	---		32	18	18	Nil	20	Nil
6	Total Alkalinity as CaCO3	mg/l	---		205	320	530	410	268	375
7	Total Hardness	mg/l	---		56	21	21	28	122	28
8	Calcium	mg/l	---		12	4	4.0	5	31	5.0
9	Magnesium	mg/l	---		6	2	2	3	11	3.0
10	Biochemical Oxygen Demand	mg/l	30	30	<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	0.35	0.92	0.86	0.48	0.41	0.58
16	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Zinc	mg/l	5	2	0.011	0.013	0.024	0.019	0.015	0.018
18	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
22	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Nitrate Nitrogen(as N),mg/L		0.5		0.17	2.2	2.38	0.61	5.47	0.80

Date					Apr.'22					
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	Kunur Nala Downstream Near Kuldiha Bridge	EDH-64(Discharge)
25	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Iron		3		0.86	0.22	0.35	0.62	1.35	0.35
27	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
28	Dissolved Phosphate	mg/l	5		0.11	0.14	0.17	0.09	0.11	0.16
29	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
30	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Free Amonia	mg/l	5		0.07	0.1	0.12	0.3	0.05	0.25
33	Ammonical Nitrogen	mg/l	50		3.6	4.9	4	3	1.8	3.1
34	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
35	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
36	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					May'22					
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)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	EDH-64(Discharge)
1	pH at 27ºC		5.5 to 9.0	5.5-9.0	8.2	7.98	7.85	8.31	7.8	7.65
2	Temperature	Deg C	---	40 deg C	34.2°C	34.5°C	34.6°C	35.8°C	36.3°C	32.1°C
3	Total Suspended Solids	mg/l	100	100	<2	3	<2	6	2	<2
4	Total Dissolved Solids	mg/l	---	2100	1038	746	1164	986	562	886
5	Acidity as CaCO3	mg/l	---		4	16	18	Nil	18	24
6	Total Alkalinity as CaCO3	mg/l	---		580	240	365	475	160	240
7	Total Hardness	mg/l	---		29	79	17	40	113	35
8	Calcium	mg/l	---		7	21	4.0	10	30	8.0
9	Magnesium	mg/l	---		3	7	2	4	9	3.0
10	Biochemical Oxygen Demand	mg/l	30	30	<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	0.78	0.62	1.15	1.24	0.77	1.28
16	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Zinc	mg/l	5	2	0.014	0.01	0.019	0.016	0.011	0.019
18	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
22	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Nitrate Nitrogen(as N),mg/L		0.5		2.39	0.32	1.79	0.68	4.75	0.80

Date					May'22					
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)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	EDH-64(Discharge)
25	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Iron		3		0.33	0.85	0.21	1.15	0.64	0.18
27	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
28	Dissolved Phosphate	mg/l	5		0.13	0.09	0.15	0.19	0.08	0.12
29	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
30	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Free Amonia	mg/l	5		0.23	0.11	0.16	0.23	0.09	0.07
33	Ammonical Nitrogen	mg/l	50		3.3	2.1	3.9	2.6	3.1	2.4
34	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
35	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
36	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					June'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-64(Discharge)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	GGS-1(R.O Discharge)	Kunur Nala Upstream Near GGS#1	EDD-50 (R.O-Discharge)
1	pH at 27ºC		5.5 to 9.0	5.5-9.0	7.08	7.65	7.65	7.80	8.13	7.90
2	Temperature	Deg C	---	40 deg C	31.4°C	34.7°C	33.2°C	34.5°C	33.6°C	35.0°C
3	Total Suspended Solids	mg/l	100	100	<2	12	16	3	6	2
4	Total Dissolved Solids	mg/l	---	2100	664	738	568	1018	572	1198
5	Acidity as CaCO3	mg/l	---		30	22	22	18	4	15
6	Total Alkalinity as CaCO3	mg/l	---		186	215	130	185	210	380
7	Total Hardness	mg/l	---		43	114	180	71	110	74
8	Calcium	mg/l	---		9	27	38	16	25	19
9	Magnesium	mg/l	---		5	11	21	8	8	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	9	<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	0.72	0.45	0.49	0.36	0.52	0.69
16	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Zinc	mg/l	5	2	0.012	0.01	<0.01	0.018	0.011	0.015
18	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
22	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Nitrate Nitrogen(as N),mg/L		0.5		<0.1	0.92	2.50	2.73	0.34	2.63

Date					June'22					
S. No.	Parameter	Unit	CPCB Limit for Discharge	Onshore Discharge Standards	EDH-64(Discharge)	Kunur Nala Downstream between EDH 58 & 64	Kunur Nala Downstream Near Kuldiha Bridge	GGS-1(R.O Discharge)	Kunur Nala Upstream Near GGS#1	EDD-50 (R.O-Discharge)
25	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Iron		3		<0.1	1.45	1.30	0.86	1.30	0.51
27	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
28	Dissolved Phosphate	mg/l	5		0.08	0.12	0.18	0.15	0.11	0.19
29	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
30	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Free Amonia	mg/l	5		0.04	0.09	0.12	0.15	0.25	0.18
33	Ammonical Nitrogen	mg/l	50		4.2	3	3.9	5	4.1	4.6
34	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
35	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
36	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					July'22					
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	EDH-64(M.S.R.O Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
1	pH at 27ºC		5.5 to 9.0	5.5-9.0	8.11	7.98	8.26	8.34	7.82	7.9
2	Temperature	Deg C	---	40 deg C	33.6°C	34.5°C	35.0°C	34.7°C	31.4°C	33.2°C
3	Total Suspended Solids	mg/l	100	100	8	<2	<2	11	<2	18
4	Total Dissolved Solids	mg/l	---	2100	792	1352	1134	1026	856	592
5	Acidity as CaCO3	mg/l	---		6	8	Nil	Nil	22	16
6	Total Alkalinity as CaCO3	mg/l	---		244	445	305	385	208	166
7	Total Hardness	mg/l	---		102	55	47	82	47	165
8	Calcium	mg/l	---		28	13	9	19	13	42
9	Magnesium	mg/l	---		8	6	6	9	4	14
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	1.3	0.90	1.82	1.1	0.58	0.75
16	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Zinc	mg/l	5	2	0.013	0.019	0.022	0.031	0.024	0.017
18	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
22	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Nitrate Nitrogen(as N),mg/L		0.5		0.3	2.97	2.29	0.79	2.65	0.08

Date					July'22					
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	EDH-64(M.S.R.O Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
25	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Iron		3		1.86	0.61	0.33	2.1	0.22	2.65
27	Manganese	mg/l	2		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
28	Dissolved Phosphate	mg/l	5		0.13	0.22	0.18	0.09	0.08	0.11
29	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
30	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Free Amonia	mg/l	5		0.22	0.2	0.28	0.25	0.09	0.11
33	Ammonical Nitrogen	mg/l	50		3.6	5.1	3.1	2.8	3.1	2.8
34	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
35	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
36	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Aug.'22					
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)	Kunur Nala Downstream between EDH 58 & 64	EDH-64(M.S.R.O Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
1	pH at 27ºC		5.5 to 9.0	5.5-9.0	8.54	7.75	8.50	7.96	8.48	7.8
2	Temperature	Deg C	---	40 deg C	34.4°C	29.7°C	32.7°C	29.0°C	29.6°C	28.5°C
3	Total Suspended Solids	mg/l	100	100	<2	20	<2	17	<2	14
4	Total Dissolved Solids	mg/l	---	2100	1462	102	1174	116	1388	118
5	Acidity as CaCO3	mg/l	---		Nil	18	Nil	11	Nil	18
6	Total Alkalinity as CaCO3	mg/l	---		949	48	719	77	182	65
7	Total Hardness	mg/l	---		39	58	27	109	39	85
8	Calcium	mg/l	---		9	14	5	30	9	22
9	Magnesium	mg/l	---		4	6	4	9	4	8
10	Biochemical Oxygen Demand	mg/l	30	30	<2	2	<2	2	<2	<2
11	Chemical Oxygen Demand	mg/l	250	100	<8	11	<8	10	<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	0.92	0.33	0.64	0.58	0.75	0.63
16	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Zinc	mg/l	5	2	0.018	<0.01	0.013	<0.01	0.022	0.015
18	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
22	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Nitrate Nitrogen(as N),mg/L		0.5		0.11	1.11	0.09	1.41	0.14	1.85

Date					Aug.'22					
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)	Kunur Nala Downstream between EDH 58 & 64	EDH-64(M.S.R.O Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
25	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Iron		3		0.54	2.70	0.37	3.1	0.28	2.65
27	Manganese	mg/l	2		<0.05	<0.05	<0.05	0.072	<0.05	0.061
28	Dissolved Phosphate	mg/l	5		0.015	0.08	0.019	0.11	0.011	0.19
29	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
30	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Free Amonia	mg/l	5		0.59	0.08	0.39	0.09	0.52	0.15
33	Ammonical Nitrogen	mg/l	50		4.2	2.8	2.8	2.2	3.7	4.9
34	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
35	colour	Hazen Units	Colourless		<5	<5	<5	<5	<5	<5
36	Odor		Odourless		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Date					Sep.'22					
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)	Kunur Nala Downstream between EDH 58 & 64	EDH-64(M.S.R.O Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
1	pH at 27ºC		5.5 to 9.0	5.5-9.0	7.68	8.16	8.38	7.55	7.81	7.72
2	Temperature	Deg C	---	40 deg C	32.6°C	30.4°C	31.4°C	33.5°C	30.3°C	30.3°C
3	Total Suspended Solids	mg/l	100	100	<2	<2	<2	2	<2	7
4	Total Dissolved Solids	mg/l	---	2100	1452	228	1390	224	958	328
5	Acidity as CaCO3	mg/l	---		21	10.3	Nil	28	24	26
6	Total Alkalinity as CaCO3	mg/l	---		1057	184	865	139	225	126
7	Total Hardness	mg/l	---		52	99	44	92	52	129
8	Calcium	mg/l	---		13	21	10	21	13	31
9	Magnesium	mg/l	---		4	12	4	10	4	13
10	Biochemical Oxygen Demand	mg/l	30	30	<2	5	<2	<2	<2	2
11	Chemical Oxygen Demand	mg/l	250	100	<8	26	<8	<8	<8	10
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	0.97	0.48	0.82	0.48	0.95	0.63
16	Total Chromium	mg/l	2	1	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
17	Zinc	mg/l	5	2	0.021	0.023	0.024	0.011	0.015	0.024
18	Copper	mg/l	3	0.2	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
19	Nickel	mg/l	3	3	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
20	Lead	mg/l	0.1	0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
21	Mercury	mg/l	0.01	0.01	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
22	Cyanide	mg/l	---	0.2	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
23	Hexavalent Chromium	mg/l	0.1		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
24	Nitrate Nitrogen(as N),mg/L		0.5		4.18	<0.05	2.39	0.91	2.23	2.56

Date					Sep.'22					
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)	Kunur Nala Downstream between EDH 58 & 64	EDH-64(M.S.R.O Discharge)	Kunur Nala Downstream Near Kuldiha Bridge
25	Vanadium	mg/l	0.2		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Iron		3		0.47	0.35	0.28	1.30	0.62	4.95
27	Manganese	mg/l	2		<0.05	<0.05	<0.05	0.052	<0.05	<0.05
28	Dissolved Phosphate	mg/l	5		0.04	<0.01	0.06	0.11	<0.01	0.22
29	Selenium		0.05		<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
30	Cadmium	mg/l	2		<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
31	Arsenic	mg/l	0.2		<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
32	Free Amonia	mg/l	5		0.07	0.07	0.19	0.04	0.05	0.11
33	Ammonical Nitrogen	mg/l	50		2.3	1	1.7	1.9	1.6	3.7
34	Total residual chlorine	mg/l	1		<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
35	colour	Hazen Units	Colourless			<5	<5	<5	<5	<5
36	Odor		Odourless			Agreeable	Agreeable	Agreeable	Agreeable	Agreeable

Ground Water Analysis of Surrounding Areas of CBM Raniganj Project of EOGEPL
Compliance Period: Apr.'22 to Sep.'22

S. No.	Parameter	Unit	S:10500 -1991		Bansia Village	Kalikapur Village	Nachan Village	Bargoria Village	Jatgoria Village	Kantaberia Village	Dhabani Village	Akandara Village	Labnapara village	Saraswatiganj village	Ghatakdanga Village	Sarenga Village	Gopalpur Village
			Desirable limit	Permissible limit													
1	Colour	Hazen	5	15	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5	<5
2	pH Value		6.5-8.5	No relaxation	7.49	7.33	7.3	7.49	7.43	7.45	7.5	7.2	7.46	7.25	7.1	7.16	7.32
3	Turbidity, NTU	NTU	1	5	8	24	12	14	19	<1	2	<1	4	6	3	<1	42
4	Total Dissolved Solids	mg/l	500	2000	328	306	368	38	138	104	42	46	332	196	28	276	232
5	Total Suspended Solids,	mg/l	---	---	3	9	5	6	8	<2	<2	<2	<2	3	<2	<2	18
6	Total Alkalinity as $CaCO_3$	mg/l	200	600	315	290	340	16	36	28	10	12	285	96	12	204	40
7	Total Hardness	mg/l	200	600	220	212	264	13	64	44	15	22	240	80	10	228	112
8	Aluminium (as Al)	NTU	0.03	0.2	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
9	Ammonia (as total ammonia -N)	mg/l	0.5	No relaxation	0.12	0.13	0.11	0.13	0.27	0.12	0.15	0.14	0.13	0.15	0.27	0.3	0.24
10	Anionic Detergents (as MBAS)	mg/l	0.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
11	Barium (as Ba)	mg/l	0.7	No relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
12	Boron (as B)	mg/l	0.5	1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
13	Calcium (as Ca)	mg/l	75	200	50	45	59	4	16	12.8	4	6.4	63	25.7	2.4	56	40
14	Chloride (as Cl)	mg/l	250	1000	18	21	21	15	43	30	12	12	28	51	8	31	62
15	Copper (as Cu)	mg/l	0.05	1.5	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
16	Fluoride (as F)	mg/l	1	1.5	<0.05	<0.05	0.29	<0.05	<0.05	<0.05	<0.05	<0.05	0.35	0.15	<0.05	0.08	0.35
17	Free Residual Chlorine	mg/l	0.2	1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
18	Iron (as Fe)	mg/l	0.3	No relaxation	1.63	3.1	2.73	2.75	2.9	0.22	1.37	0.18	1.8	2.33	1.12	0.23	4.36
19	Magnesium (as Mg)	mg/l	30	100	23	24	28	<1	6	2.9	1.2	1.5	20.4	3.9	1	22	3.9
20	Manganese (as Mn)	mg/l	0.1	0.3	<0.05	0.086	<0.05	<0.05	<0.05	0.286	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	0.133
21	Mineral Oil	mg/l	0.5	No relaxation	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
22	Nitrate (as NO_3)	mg/l	45	No relaxation	2.08	<0.5	<0.5	1.99	7.93	4.12	7.35	3.06	6.56	3.19	0.85	6.6	6.73
23	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	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002
24	Sulphate (as SO_4)	mg/l	200	400	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	<2.5	52.5
25	Silver (as Ag)	mg/l	0.1	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
26	Sodium (as Na)	mg/l	---	---	42.7	33.8	44.9	6.7	35.7	32.7	8.5	9	34.7	41.5	6.8	29.8	43.7
27	Selenium (as Se)	mg/l	0.01	No relaxation	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
28	Cadmium (as Cd)	mg/l	0.003	No relaxation	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
29	Cyanide (as CN)	mg/l	0.05	No relaxation	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
30	Lead (as Pb)	mg/l	0.01	No relaxation	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
31	Mercury (as Hg)	mg/l	0.001	No relaxation	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
32	Total Arsenic (as As)	mg/l	0.01	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
33	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	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
34	Pesticide Residues	mg/l	0.01	No relaxation	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
35	Total Coliform Count,	MPN/100 mL	Shall not be detectable in any 100 ml sample		<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1
36	Odour		Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
37	Polychlorinated Biphenyls	mg/l	0.0005	No Relaxation	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable	Not Detectable
38	Chloramines	us/cm	4	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
39	Molybdenum	mg/l	0.07	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
40	Sulphide,mg/L	mg/l	0.05	No Relaxation	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5
41	Electrical Conductivity at 25° C,	µmhos/cm	---	---	540	520	615	58	235	180	75	90	590	320	60	450	415
42	Phosphorus(as P)	mg/l	---	---	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
43	Nickel	mg/l	0.02	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
44	Total Chromium	mg/l	0.05	No Relaxation	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
45	Zinc	mg/l	5	15	0.019	0.01	0.011	<0.01	<0.01	<0.01	<0.01	<0.01	0.014	<0.01	0.012	<0.01	0.014

ANNEXURE VI

MEMBERSHIP CERTIFICATE

THIS IS TO CERTIFY THAT M/S.ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LIMITED HAVING ITS UNIT AT B-2, VILL & P.O.- GOPALPUR, GOPALPUR SARENGA ROAD, P.S.-KANKSHA, DURGAPUR-713212 IS A REGISTERED LIFETIME MEMBER OF INTEGRATED COMMON HAZARDOUS WASTE TREATMENT STORAGE AND DISPOSAL FACILITY (ICHW-TSDF) AT JL. 80, VILL. PABAYAN, P.S. SALTORA, DIST.- BANKURA, WEST BENGAL- 722158. OPERATED BY WEST BEMGAL WASTE MANAGEMENT LTD.

THE MEMBERSHIP IS WBWML/HZW/HzW/DGPR/E- 004 AND VALID TILL 31st March 2023.

WEST BENGAL WASTE MANAGEMENT LIMITED

PROJECT HEAD

West Bengal Waste Management Limited
(A Division of Re Sustainability Limited)

Site Address:
CHW-TSDF at: Plot No.- 80,
Vill.-Pabayan, P.S.: Saltora,
Dist.- Bankura, West Bengal 722 158, India

Registered Office:
Level 11, Aurobindo Galaxy,
Hyderabad Knowledge City,
Hitech City Road, Hyderabad-500 081. India.
CIN No. U74140TG1994PLC018833

T: +91 74777 96110
E: wbwml.saltora@resustainability.com
resustainability.com

ANNEXURE VII

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 Durgapur. 713 212.
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)	Inspec Oils Limited A/122 Phase-III Block-A Kalyani.
5.	Type of vehicle :	(Truck / Tanker / Special Vehicle)
6.	Transporter's registration No. :	182/25 (HW) - 2545/2009
7.	Vehicle registration No. :	
8.	Receiver's name and mailing address (including Phone No. and e-mail)	Inspec Oils Limited A/122, Phase-III, Block-A Kalyani Nadia
9.	Receiver's authorisation No.	182/25 (HW) - 2545/2009
10.	Waste description :	- Used oil -
11.	Total quantity : No. of Containers :	2400 L TR ..... m^3 or MT/~~KL~~ 12 ..... Nos.
12.	Physical form :	~~(Solid / Semi - Solid / Sludge~~ / Oily / Tarry / Slurry / Liquid)
13.	Special handling instructions and additional information :	Handle
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully 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 : ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LIMITED DURGAPUR CBM PROJECTS	Signature :	Month 08	Day 19	Year 2022
15.	Transporter acknowledgement of receipt of Wastes				
	Name and stamp : Manoj Dasgupta INSPEC OILS KOLKATA	Signature :	Month 08	Day	Year 2022
16.	Receiver's certification for receipt of hazardous and other waste				
	Name and stamp :	Signature :	Month	Day	Year

FORM 10

2nd Copy

WEST BENGAL WASTE MANAGEMENT LIMITED

J.L. No. – 80, Vill. : Pabayan, P.O. : Bishjore, P.S. : Saltora, Bankura, W.B. 722158

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 Vill and Post ⇒ Malandighi Block ⇒ Kanksa Dist ⇒ Paschim Bardhaman DURGAPUR 713212
2	Sender's authorization No. :	205/25 (HW) - 2449/2008
3	Manifest Document No. :	1 432
4	Transporter's name and address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. – 80, Mouza : Pabayan, P.S. : Saltora, Dist. : Bankura West Bengal, Pin- 722158
5	Type of vehicle :	(Truck/Tanker/Special Vehicle)
6	Transporter's registration No. :	1-MD(E)/X/06
7	Vehicle registration No. :	WB 31N 0062
8	Receiver's name and mailing address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. – 80, Mouza : Pabayan, P.S. : Saltora, Dist. : Bankura West Bengal, Pin- 722158
9	Receiver's authorization No. :	
10	Waste description :	Oil (contaminated waste, filter, silica)
11	Total quantity No. of Containers :	4.73 ..... m3 or MT ..... Nos.
12	Physical form :	**(Soild/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)**
13	Special handling instructions and additional information	Safety shoe. Hand gloves, google. Helmets
14	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping categorized, packed, marked and name and are labeled and are in all respects in proper conditions for transport by road according to applicable National Government Regulations.
	Name and stamp	Signature Day 11 Month 10 Year 2022
15	Transporter acknowledgement of receipt of Wastes :	
	Name and stamp	Signature Day 11 Month 10 Year 2022
16	Receiver's certification for receipt of hazardous and other waste :	
	Name and stamp	Signature Day Month Year

1. White Colour forwarded to WBPCB by HzW Sender
2. Yellow Colour retained by HzW sender
3. Pink Colour retained by HzW Receiver
4. Orange Colour retained by transporter
5. Green Colour forwarded to WBPCP ofter disposal by HzW Receiver
6. Blue Colour returned to sender after disposal by HzW Receiver

ANNEXURE VIII

LAND SUBSIDENCE STUDY AT CBM – RANIGANJ BLOCK

Submitted To

ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LIMITED.
DURGAPUR

Prepared By

Department of Earth and Environmental Studies
NATIONAL INSTITUTE OF TECHNOLOGY DURGAPUR
DURGPUR - 713209

Dr. Kalyan Adhikari
Depratment of EES
Principal Investigator

July 2022

Dr. Manoj Kumar Ozha
Depratment of EES
Co-Investigator

Table of Contents

IMPORTANT TERMS

- **Base Station:** A base station is a receiver placed at a known point on a job site that tracks the same satellites as an RTK rover, and provides a real-time differential correction message stream through radio to their Rover, to obtain centimeter level positions on a continuous real-time basis. A base station can also be a part of a virtual reference station network, or a location at which GPS observations are collected over a period of time, for subsequent post processing to obtain the most accurate position for the location.
- **RINEX (Receiver Independent Exchange Format):** RINEX is the standard format that allows the management and disposal of the measures generated by a receiver, as well as their off-line processing by a multitude of applications, whatever the manufacturer of both the receiver and the computer application.
- **Rover:** A rover is any mobile GPS receiver that is used to collect or update data in the field, typically at an unknown location.
- **WGS84 (World Geodetic System):** A geodetic datum is the tool used to define the shape and size of the earth, as well as the reference point for the various coordinate systems used in mapping the earth. All GPS coordinates are based on theWGS-84 datum surface.
- **Coordinate systems: -** Aligning geographic data to a known coordinate system so it can be viewed, queried, and analyzed with other geographic data. Geo-referencing may involve shifting, rotating, scaling, skewing, and in some cases warping, rubber sheeting, or ortho-rectifying the data.

ABBREVIATIONS

PCP : Primary control points.

DGPS : Differential Global Positioning System.

RTK : Real Time Kinematic mode.

ETS : Electronic Total station.

RINEX : Receiver Independent Exchange Format

UTM : Universal Transverse Mercator

GIS : Geographical Information System

GCP : Ground Control Point.

1. Introduction:

Essar Oil Limited (EOL) was awarded block RG (East)-CBM-2001/1 covering an area of approx. 500 sq km under the CBM-I Round, contract signed on 26th July 2002. EOL holds 100% participating interest in the block. The Petroleum Exploration License (PEL) was issued by the Government of West Bengal on 29th March 2005.

The Ministry of Environment & Forests (MoEF) granted Environment Clearance for drilling 650 development cum production wells, laying 8 Gas Gathering Stations, 1 Main Compressor Station and pipeline vide F.No.J-11011/491/2011-IA II(I) dated 26th February, 2013.

It was further suggested by MoEF to get the land subsidence study carried out by an institute of repute. In view of above, it was requested by ESSAR to Department of Earth and Environmental Studies, National Institute of Technology (NIT) Durgapur for carrying out land subsidence study on prefixed control stations (vertical concrete pillars) at RG (E) –CBM-2001/1 block. Project work order was awarded to the Department of Earth and Environmental Studies, NIT Durgapur for a period of two years with half yearly frequency subsidence monitoring to all established monitoring stations. Accordingly, a visit was made by the Investigators for reconnaissance study of the site in the month of June 2016. During the study, it was observed that few controlling stations are in damaged conditions. However, first, second, third, fourth and fifth phase monitoring work was executed in the mid of June, 2016, mid of January 2017, first week of February, 2019, last week of July, 2019. After the 2 year term finished, EOGEPL issued work order for execution of the monitoring work once in the year 2020 and accordingly the work was carried out in September, 2020. The present study has been carried out in May-June, 2022 as Sixth phase by NIT Durgapur through a work order no. 4600002667, dated 28.01.2022. The report has been prepared based on the data obtained from the site.

This report mainly consists of the following

- A brief description of the Essar CBM Block, RG (East)-CBM-2001/1
- Details of locations of monitoring stations over the surface of the CBM block, RG (East)-CBM-2001/1
- Methodology adopted for subsidence study through DGPS observation.

- Plot of ground elevation of the control stations.

2. Location and Accessibility:

Block: RG (East)-CBM-2001/1 covers an area of 500 sq.km. (Approximately) and is located in the eastern-most part of the Raniganj Coalfield. It falls largely in Bardhaman district (90%), West Bengal. The block is bounded by Latitude 23°21'45" and 23°41'12" N and Longitude: 87°14'40" and 87°28'46" E. It lies in the Survey of India Topographical Sheet Nos. 73 M/2, M/3, M/6 & M/7 (1:50,000).

3. Development of subsidence

Coal seam gas production often involves the extraction of groundwater to facilitate depressurization of the target coal seam. The disposal or reuse of this collected water is an area of great public interest, as depressurization results in compaction of the ground and leads to settlement of the ground surface (surface subsidence). The reduction in pressure results in compaction of the geological units in which depressurization occurs. In addition, the liberation of gas from coal seams results in compaction of the coal. Subsidence at the ground surface is some component of the total compaction occurring within (potentially) multiple geological units. It is dependent on the magnitude and direction of compression (which is dictated by pressure changes from groundwater withdrawal and desorption of gas from coal seams), the depth and depth-interval over which compression occurs, and the geotechnical properties of the geological units throughout the depth profile.

4. Impacts of subsidence

Land subsidence may affect a variety of assets, including infrastructure (such as buildings, roads, railways, pipelines, dams, water channels, levees and electrical infrastructure) and environmental assets (such as aquifers, groundwater dependent ecosystems, streams, lakes,

springs, and other surface water resources). Impacts of subsidence on infrastructure could include structural damage to buildings, buried pipes and sewers, and reduction in stability of buildings and electrical transmission lines and towers/poles. The serviceability of roads and railways may be affected by distortion of the road surface and rail foundation. Depressions in the ground surface due to subsidence may increase exposure to flooding, overflowing levees or storm surges in areas near the coast. Impacts of subsidence on environmental assets could include the formation of ground fissures and partial or complete loss of surface water drainage to deeper strata, stream bed and bank erosion, development of subsidence troughs and ponding of water, disruption to hillside groundwater springs and sensitive wetlands or swamps, and potential shearing of groundwater supply wells.

5. Instruments:

For DGPS Survey we have used the following instruments as detailed below:

a) DGPS (Leica Make) GNSS, GPS/GLONASS/GALILEO with Triple frequency RTK receiver.

GS14 is loaded with a multitude of features and functions to meet the many different needs of users all over the world, yet it is remarkably easy to use.

GS14 receivers: GX1230+ GNSS/ ATX1230+ GNSS

- Triple frequency
- GPS/ GLONASS/ Galileo/ Compass[1]
- 120 Channels
- L1/L2/L5 GPS
- L1/L2 GLONASS
- E1/ E5a/ E5b /Alt-BOC Galileo
- 4 SBAS
- Full Real Time RTK
- Use as rover or reference

Base:

-GX1230 GPS L1/L2 Receiver
-RX1210 Terminal
-AX1202 GPS L1/L2 Antenna w/ Cable
-Leica Pro Tribrach w/ Optical Plummet
-GRT144 Carrier w/ Stub and Quick Change Adapter
-Pacific Crest PDL Radio 35w, 450-470MHz w/ 1/4 Wave Antenna, Power/Data Cable, and Pelican Case.
-32MB Industrial CF Memory Card
-Leica Power Cable w/ Car Battery Adapter
-GZS4-1 Height Hook

Rover:

-RX1250X GPS Data Collector, Smartworx v8.50. Ext. OWI key. GLONASS ready.
-ATX1230 GG GNSS Antenna w/ Bluetooth
-GHT56 GFU Cradle w/ Rod Clamp
-GFU15-2 PDL Radio, 450-470MHz w/ Antenna
-GKL211 Charger
-GEB221 Battery (New Aftermarket)
-3 x GEB211 Battery (New Aftermarket)
-32MB Industrial CF Memory Card
-USB CF Multi Card Reader (New)

b) Prismatic Compass with all standard accessories.

A prismatic compass is a navigation and surveying instrument which is extensively used for determining course, waypoints (an endpoint of the leg of a course) and direction, and for calculating bearings of survey lines and included angles between them. Compass surveying is a type of surveying in which the directions of surveying lines are determined with a magnetic compass, and the length of the surveying lines are measured with a tape or chain or laser range finder. The compass is generally used to run a traverse line. The compass calculates bearings of lines with respect to magnetic north. The included angles can then be calculated using suitable formulas in case of clockwise and anti-clockwise traverse respectively. For each survey line in the traverse, surveyors take two bearings that is fore

bearing and back bearing which should exactly differ by 180° if local attraction is negligible. The name Prismatic compass is given to it because it essentially consists of a prism which is used for taking observations more accurately.

6. Procedure:

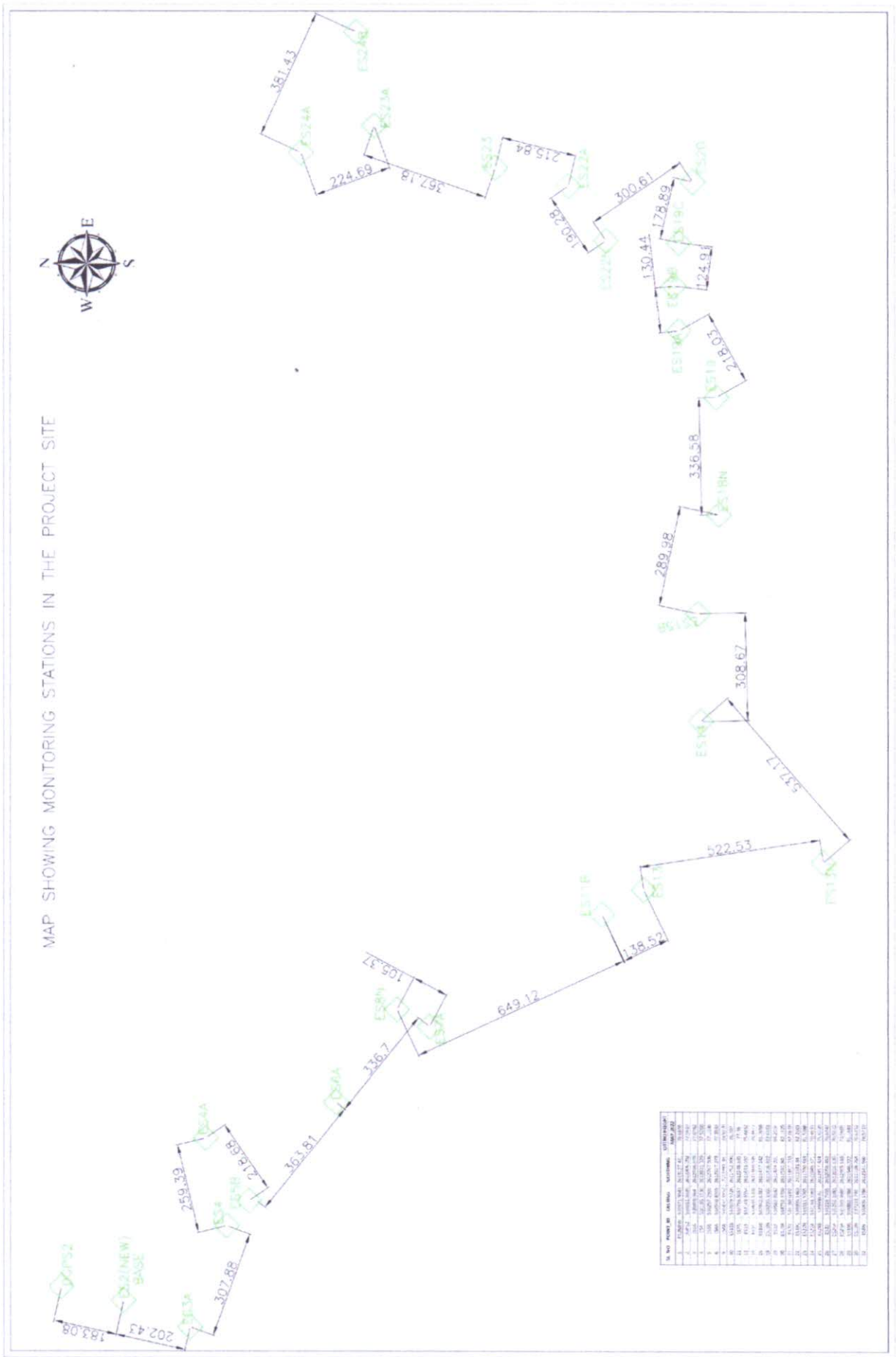
Survey work conducted from one DGPS Control Pillar to another control pillar by using DGPS static mode of observation. After completion of field survey the raw data was processed through Leica software. During processing tropospheric & ionospheric model corrections were made to compute the model and the Total Vertical Height (field Instrument height + Vertical offset) was measured as height correction.

The phase-wise subsidence monitoring studies were conducted by measuring the ground elevation of all pre-established permanent control station near the well locations at the project site. The coordinates (X, Y, Z) of the stations were also checked. These control stations were found established by embedding and casting concrete pillars in the ground to a depth of at least 0.5 meters. During the survey work it was found that some control points are partly or complete damaged. At some well locations, existing concrete cemented foundation blocks were selected and control points were marked on the block using the appropriate markers. Table 1 exhibits the identification marks, corresponding Station ID and present status of the control points.

Control station details:

Station no.	Location details	Present Status
DGPS2	CULVERT OPPOSITE TO SCHOOL	Ok
ES2 (NEW)	CONCRETE PILLAR NEAR GGS-1 ENTRANCE OLD SECURITY ROOM	Treated as New Base
ES3A	CONCRETE SMALL PILLAR NEAR SECURITY ROOM AT EDD009	Ok
ES4	CONCRETE SMALL PILLAR NEAR SECURITY ROOM AT EDD011	Ok
ES4A	CONCRETE SMALL PILLAR NEAR SECURITY ROOM AT EDD006	Ok
ES5B	CONCRETE PILLAR NEAR WATER TANK AT EDD011	Under High Voltage Electrical Line
ES6A	CONCRETE PILLAR NEAR BOUNDARY AT EDD010	Ok
ES7A	CONCRETE PILLAR NEAR BOUNDARY & GATE AT EDD003	Under Dense Tree Cover
ES8N	PAINT MARK ON EXISTING FOUNDATION OF EARTH PROTECTOR PIPE NEAR ROAD SIDE TOWARDS EDD003	Ok
ES9	CONCRETE SMALL PILLAR NEAR BOUNDARY AT ROAD SIDE NEAR NEAM TREE	Missing
ES11B	KM MILESTONE PILLAR ROADSIDE LEADING TO KANTABERIA	Ok

Station no.	Location details	Present Status
ES13	EDD004	Ok
ES13N	EDD026	New constructed Pillar shifted to nearest location
ES14	EDD012	Ok
ES15B	ROAD SIDE RIGHT HAND CULVERT AFTER KANTABERIA CHOWK	Almost Damaged
ES15C	ROAD SIDE KM MILE STONE AFTER KANTABERIA CHOWK	Complete Damaged
ES18N	NEAR BOUNDARY WALL OF PLAYGROUND AFTER KANTABERIA CHOWK	Ok
ES19	EDD008	Ok
ES19A	PAINT MARK ON FOUNDATION OF PIPE LINE SIGN BOARD RIGHT SIDE ROAD AFTER EDD008	Almost Not Visible
ES19B	PAINT MARK ON FOUNDATION OF EARTH PROTECTOR RIGHT SIDE ROAD AFTER EDD008	Almost Not Visible
ES19C	PAINT MARK ON KM MILE STONE RIGHT SIDE ROAD AFTER EDD008	Ok
ES20	EDD005	Ok
ES22N	IN FRONT OF EDD013 ON HIGH MOUND GROUND NEAR TEMPORARY SHED	Ok
ES22A	LEFT SIDE CULVERT NEAR WATER SETLING POND AFTER EDD013	Ok
ES23	EDD002	Ok
ES23A	CONCRETE PILLAR LEFT SIDE OF ROAD AFTER EDD002, BARREN LAND	Ok
ES24A	EDD018	Ok
ES24B	EDD025	Ok


MAP SHOWING MONITORING STATIONS IN THE PROJECT SITE
N
E
S
W
351.43
224.69
362.18
215.84
190.28
300.61
178.89
130.44
124.9
218.03
336.58
289.98
308.67
537.17
522.53
139.52
649.12
105.37
336.7
363.81
218.88
259.39
307.88
202.43
183.08

7. Results:

The R.L. (Elevation Z) as observed during the Third Phase (III), Forth phase (IV), Fifth phase (V) & Sixth phase (VI) at the established control stations surrounding the well locations [ES2 (new) to ES24B] are given in Table 3, Table 4, Table 5. Table 6 respectably and Fig. 2. The photographs of subsidence monitoring study conducted at RG (East) CBM block are given in Annexure-1.

Table 3: Total Latitude, longitude and ground elevation at the control stations during February 2019

SL NO.	POINT_ID	TYPE	EASTING	NORTHING	ORTHO HEIGHT
1	ES2NEW	Reference	535971.9543	2613127.421	78.0855
2	DGPS2	Measured	536011.8835	2613306.092	77.9812
3	ES3A	Measured	535895.964	2612936.978	77.1294
4	ES4	Measured	536185.1536	2612831.329	77.5271
5	ES6	Measured	536509.599	2612543.385	77.3298
6	ES5A	Measured	536258.5991	2612746.836	77.0865
7	ES5B	Measured	536257.2503	2612767.506	77.1344
8	ES6A	Measured	536540.8355	2612517.273	77.3532
9	ES4A	Measured	536437.4952	2612891.38	78.9292
10	ES11B	Measured	537079.5726	2611752.896	76.9967
11	ES7A	Measured	536756.5057	2612248.635	77.4838
12	ES13	Measured	537149.9354	2611633.037	75.686
13	ES12	Measured	537152.1329	2611691.748	76.6908
14	ES14	Measured	537634.1102	2611469.345	78.4697
15	ES15A	Measured	537860.2241	2611474.448	80.9516
16	ES15	Measured	537820.6173	2611389.821	80.6117
17	ES15B	Measured	537942.6787	2611477.142	81.7059
18	ES15C	Measured	538047.3177	2611456.367	81.8705
19	ES18N	Measured	538226.3166	2611416.822	82.6185
20	ES19	Measured	538562.8142	2611424.201	84.2948
21	ES19A	Measured	538752.4456	2611531.801	82.1911
22	ES20	Measured	539180.6002	2611492.233	82.0627
23	ES19C	Measured	539006.1463	2611531.84	82.2092
24	ES22N	Measured	539011.5765	2611740.818	81.5396
25	ES22A	Measured	539168.1963	2611848.871	78.4946
26	ES24B	Measured	539608.81	2612457.424	75.6738
27	ES23	Measured	539219.7855	2612058.453	76.6745
28	ES24A	Measured	539262.1981	2612616.636	70.5945
29	ES23A	Measured	539339.3689	2612405.618	73.96
30	ES19B	Measured	538882.0786	2611546.322	81.2674
31	ES13A	Measured	537233.7395	2611118.764	76.7189
32	ES9	Measured	536956.5858	2612029.666	77.4691
33	ES8N	Measured	536806.1786	2612341.566	78.5734

Table 4: Total Latitude, longitude and ground elevation at the control stations during July 2019

POINT_ID	EASTING	NORTHING	ORTHO HEIGHT
ES2NEW	535971.9543	2613127.421	78.0855
DGPS2	536011.8835	2613306.092	77.9809
ES3A	535895.964	2612936.978	77.0770
ES4	536185.1536	2612831.329	77.5270
ES4A	536437.4952	2612891.38	78.9289
ES5A	536258.5991	2612746.836	77.0866
ES5B	536257.2503	2612767.506	77.1338
ES6	536509.599	2612543.385	77.3280
ES6A	536540.8355	2612517.273	77.3530
ES7A	536756.5057	2612248.635	77.4795
ES8N	536806.1786	2612341.566	78.5728
ES9	536956.5858	2612029.666	77.4689
ES11B	537079.5726	2611752.896	76.9970
ES12	537152.1329	2611691.748	76.5820
ES13	537149.9354	2611633.037	75.6858
ES13A	537233.74	2611118.764	76.6140
ES14	537634.1102	2611469.345	78.4689
ES15	537820.6173	2611389.821	80.6114
ES15B	537942.6787	2611477.142	81.7046
ES15C	538047.3177	2611456.367	81.8703
ES18N	538226.3166	2611416.822	82.6179
ES19	538562.8142	2611424.201	84.2944
ES19A	538752.4456	2611531.801	82.1909
ES19B	538882.0786	2611546.322	81.1690
ES19C	539006.1463	2611531.84	82.2082
ES20	539180.6002	2611492.233	82.0624
ES22A	539168.1963	2611848.871	78.4939
ES22N	539011.5765	2611740.818	81.5385
ES23	539219.7855	2612058.453	76.6743
ES23A	539339.3689	2612405.618	73.9590
ES24A	539262.1981	2612616.636	70.5929
ES24B	539608.81	2612457.424	75.6730

Table 5: Total Latitude, longitude and ground elevation at the control stations during September, 2020

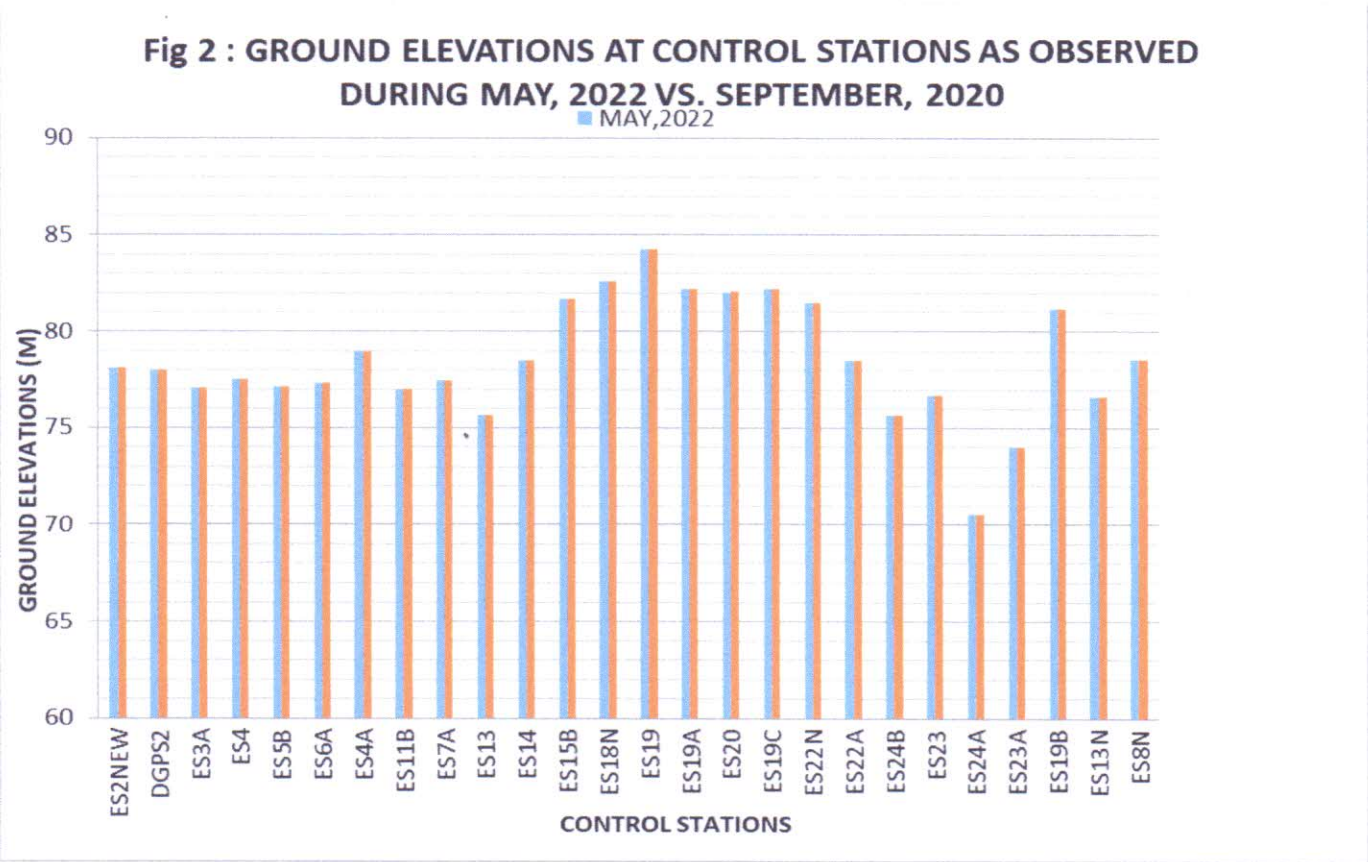
SL. NO	POINT_ID	TYPE	EASTING	NORTHING	ORTHO HEIGHT
1	ES2NEW	Reference	535971.9543	2613127.421	78.0855
2	DGPS2	Measured	536011.8835	2613306.092	77.9812
3	ES3A	Measured	535895.964	2612936.978	77.0768
4	ES4	Measured	536185.1536	2612831.329	77.5271
5	ES5B	Measured	536257.2503	2612767.506	77.1335
6	ES6A	Measured	536540.8355	2612517.273	77.3531
7	ES4A	Measured	536437.4952	2612891.38	78.9302
8	ES11B	Measured	537079.5726	2611752.896	76.9963
9	ES7A	Measured	536756.5057	2612248.635	77.4801
10	ES13	Measured	537149.9354	2611633.037	75.686
11	ES14	Measured	537634.1102	2611469.345	78.4689
12	ES15B	Measured	537942.6787	2611477.142	81.7051
13	ES15C	Measured	538047.3177	2611456.367	81.8707
14	ES18N	Measured	538226.3166	2611416.822	82.6166
15	ES19	Measured	538562.8142	2611424.201	84.2942
16	ES19A	Measured	538752.4456	2611531.801	82.1911
17	ES20	Measured	539180.6002	2611492.233	82.0624
18	ES19C	Measured	539006.1463	2611531.84	82.2088
19	ES22N	Measured	539011.5765	2611740.818	81.5385
20	ES22A	Measured	539168.1963	2611848.871	78.4936
21	ES24B	Measured	539608.81	2612457.424	75.6735
22	ES23	Measured	539219.7855	2612058.453	76.6748
23	ES24A	Measured	539262.1981	2612616.636	70.592
24	ES23A	Measured	539339.3689	2612405.618	73.9589
25	ES19B	Measured	538882.0786	2611546.322	81.1691
26	ES13N	Measured	537233.740	2611118.764	76.6138
27	ES9	Measured	536956.5858	2612029.666	77.4691
28	ES8N	Measured	536806.1786	2612341.566	78.573

Table 6: Total Latitude, longitude and ground elevation at the control stations during May, 2022

SL. NO	POINT_ID	TYPE	EASTING	NORTHING	ORTHO HEIGHT
1	ES2NEW	Reference	535971.9543	2613127.421	78.0855
2	DGPS2	Measured	536011.8835	2613306.092	77.9819
3	ES3A	Measured	535895.964	2612936.978	77.0782
4	ES4	Measured	536185.1536	2612831.329	77.5268
5	ES5B	Measured	536257.2503	2612767.506	77.1336
6	ES6A	Measured	536540.8355	2612517.273	77.3533
7	ES4A	Measured	536437.4952	2612891.38	78.9278
8	ES11B	Measured	537079.5726	2611752.896	76.997
9	ES7A	Measured	536756.5057	2612248.635	77.48
10	ES13	Measured	537149.9354	2611633.037	75.6852
11	ES14	Measured	537634.1102	2611469.345	78.4677
12	ES15B	Measured	537942.6787	2611477.142	81.7058
13	ES18N	Measured	538226.3166	2611416.822	82.6161
14	ES19	Measured	538562.8142	2611424.201	84.2934
15	ES19A	Measured	538752.4456	2611531.801	82.1925
16	ES20	Measured	539180.6002	2611492.233	82.0618
17	ES19C	Measured	539006.1463	2611531.84	82.2101
18	ES22N	Measured	539011.5765	2611740.818	81.5388
19	ES22A	Measured	539168.1963	2611848.871	78.4933
20	ES24B	Measured	539608.81	2612457.424	75.6729
21	ES23	Measured	539219.7855	2612058.453	76.6747
22	ES24A	Measured	539262.1981	2612616.636	70.5922
23	ES23A	Measured	539339.3689	2612405.618	73.9609
24	ES19B	Measured	538882.0786	2611546.322	81.1681
25	ES13N	Measured	537233.740	2611118.764	76.6152
26	ES8N	Measured	536806.1786	2612341.566	78.5719

Table 5.1: Comparisons of measured ground elevation at the control stations during September 2020 Vs. May 2022

SL. NO	POINT_ID	TYPE	EASTING	NORTHING	ORTHO HEIGHT	
					SEPTEMBER,2020	MAY,2022
1	ES2NEW	Reference	535971.9543	2613127.421	78.0855	78.0855
2	DGPS2	Measured	536011.8835	2613306.092	77.9812	77.9819
3	ES3A	Measured	535895.964	2612936.978	77.0768	77.0782
4	ES4	Measured	536185.1536	2612831.329	77.5271	77.5268
5	ES5B	Measured	536257.2503	2612767.506	77.1335	77.1336
6	ES6A	Measured	536540.8355	2612517.273	77.3531	77.3533
7	ES4A	Measured	536437.4952	2612891.38	78.9302	78.9278
8	ES11B	Measured	537079.5726	2611752.896	76.9963	76.997
9	ES7A	Measured	536756.5057	2612248.635	77.4801	77.48
10	ES13	Measured	537149.9354	2611633.037	75.686	75.6852
11	ES14	Measured	537634.1102	2611469.345	78.4689	78.4677
12	ES15B	Measured	537942.6787	2611477.142	81.7051	81.7058
13	ES18N	Measured	538226.3166	2611416.822	82.6166	82.6161
14	ES19	Measured	538562.8142	2611424.201	84.2942	84.2934
15	ES19A	Measured	538752.4456	2611531.801	82.1911	82.1925
16	ES20	Measured	539180.6002	2611492.233	82.0624	82.0618
17	ES19C	Measured	539006.1463	2611531.84	82.2088	82.2101
18	ES22N	Measured	539011.5765	2611740.818	81.5385	81.5388
19	ES22A	Measured	539168.1963	2611848.871	78.4936	78.4933
20	ES24B	Measured	539608.81	2612457.424	75.6735	75.6729
21	ES23	Measured	539219.7855	2612058.453	76.6748	76.6747
22	ES24A	Measured	539262.1981	2612616.636	70.592	70.5922
23	ES23A	Measured	539339.3689	2612405.618	73.9589	73.9609
24	ES19B	Measured	538882.0786	2611546.322	81.1691	81.1681
25	ES13N	Measured	537233.740	2611118.764	76.6138	76.6152
26	ES8N	Measured	536806.1786	2612341.566	78.573	78.5719



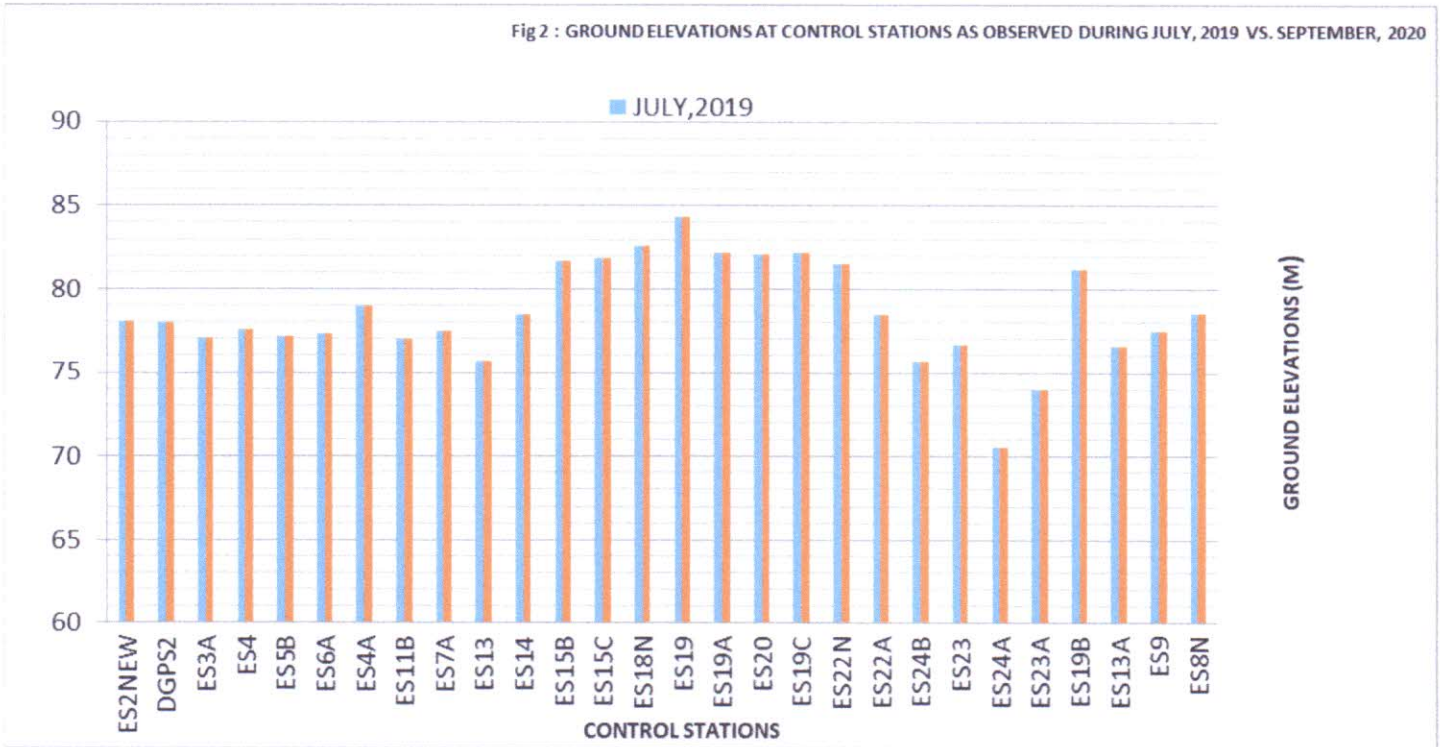


Fig.3: Ground elevations at control stations as observed during July 2019 vs. September 2020

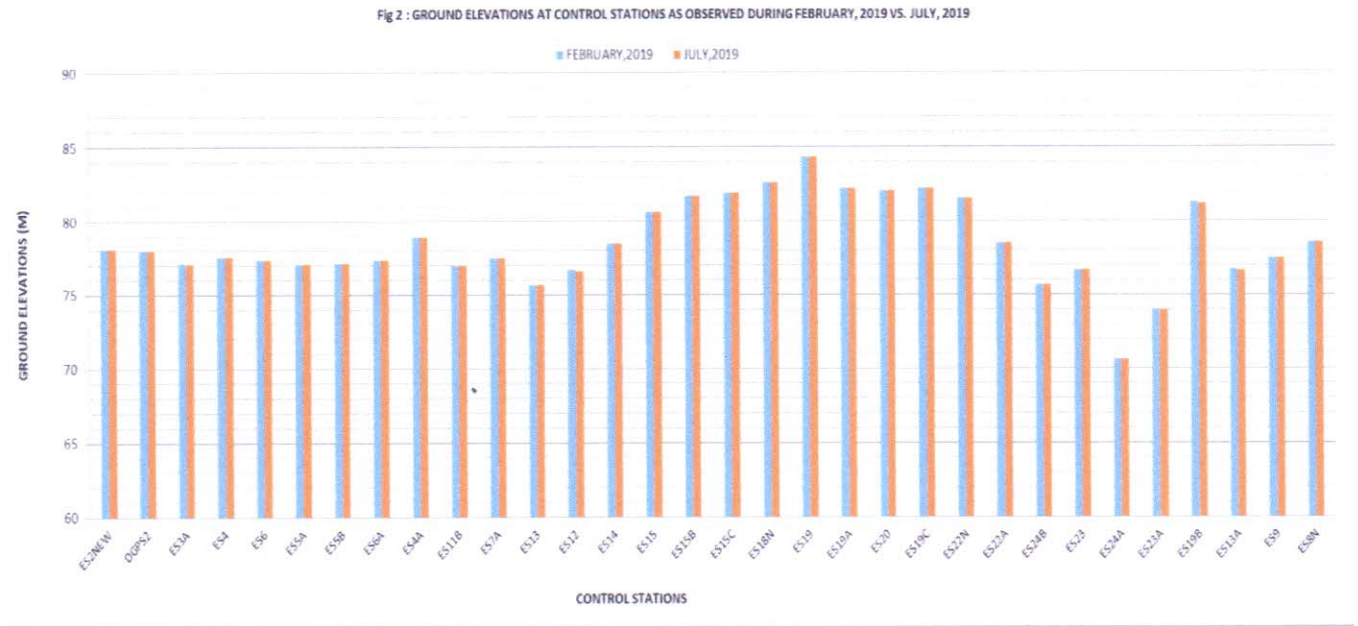


Fig.4: Ground elevations at control stations as observed during February 2019 vs. July 2019

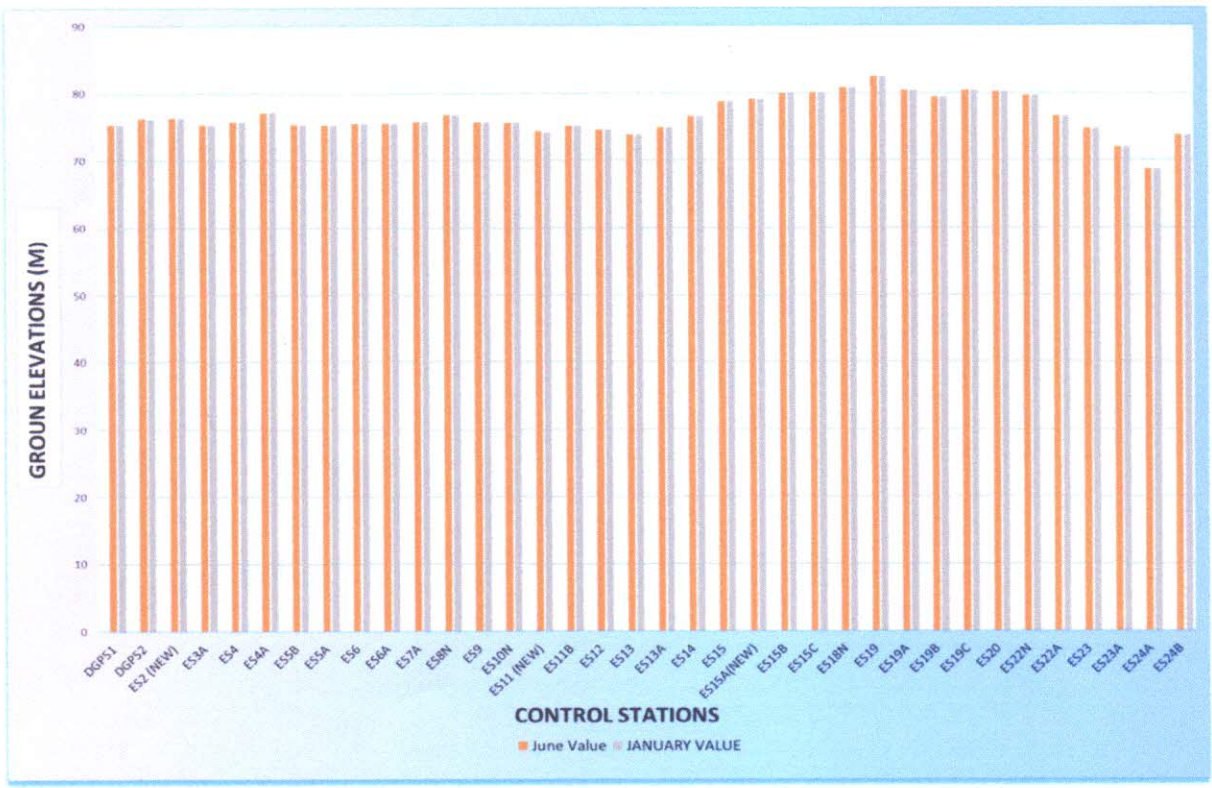


Fig.5: Ground elevations at control stations as observed during June 2016 vs. January 2017

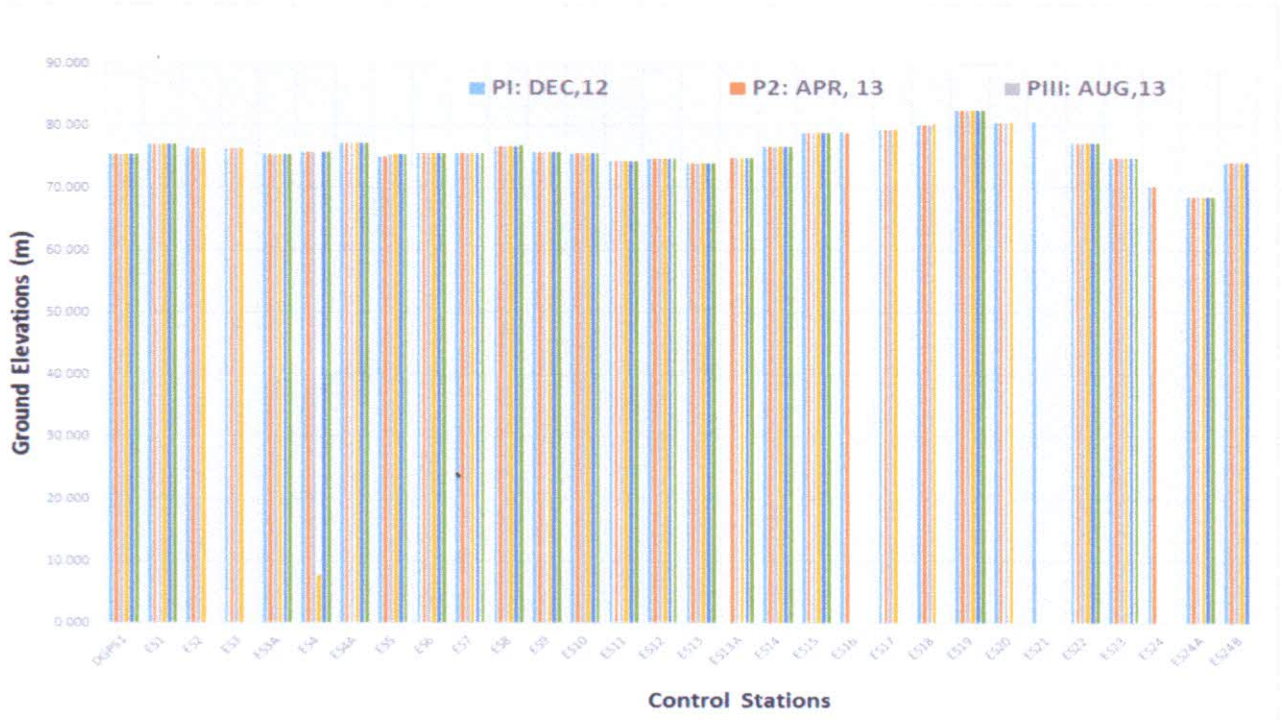


Fig.6.: Ground elevation at ESSAR Raniganj CBM Block during Dec, 12 to May, 15. Source-as per report of Department of Mining Engineering, Indian School of Mines, Dhanbad supplied by Essar Oil Limited (EOL).

8. Conclusion & Recommendation:

The R.Ls. (Elevation) of all the survey control points were measured during the present phases of subsidence survey with DGPS Instrument and also to be periodically monitored to examine the ground subsidence in the area due to compaction and collapse of overlying litho units as a result of continuous withdrawal of CBM gases. During the subsidence monitoring for nearing two and half years (December 2012 – May 2015) at CBM block conducted by Department of Mining Engineering, Indian School of Mines, Dhanbad and the studies (June 2016- May 2022) performed by National Institute of Technology Durgapur, no active subsidence were observed at the stations close to the CBM Gas well, plants side as well as at places of habitats.

The established control stations should be preserved carefully without causing any ground disturbance at the surroundings. **However, during the present study at the site, it was observed that 3 nos. control stations named ES9, ES15A & ES15C were either disturbed or removed/broken and were not considered for collection of data.** Therefore, suitable precautionary measures should be taken to preserve the survey stations from any external disturbances. A very careful preservation of control stations are required because subsidence study is a long term study and comparison of time series elevation data of each control station will depict the occurrence of subsidence, if any. Proper fencing arrangements surrounding the control stations along with sign boards displaying names of subsidence monitoring stations with their elevations are recommended to be provided at control stations. The already disturbed control stations are to be repaired prior to next phase of the monitoring study. At present the no. of control stations has been reduced to 26. It is recommended to establish one control station each between ES8N and ES11B (649m), ES13 and ES13N (522m) and ES13 and ES14 (537m).

9. Deliverables:

- ✓ Text report - Text report explaining the procedure adopted for DGPS survey.
- ✓ Tabulated reading of the DGPS readings (in UTM and Ortho Heights) and temporal comparison

20/7/2022

DR. KALYAN ADHIKARI
Professor & Head
Dept. of Earth & Environmental Studies
National Institute of Technology
Durgapur - 713209, INDIA

20/7/22

10. Site Photographs:

Plate 1: Subsidence monitoring station at ES8N

Plate 2: Subsidence monitoring station at ES4

Plate 3: Subsidence monitoring station at ES20

Plate 4: Subsidence monitoring station at ES19

Plate 5: Subsidence monitoring station at ES13N

Plate 6: Subsidence monitoring station at ES23A

Plate 7: Subsidence monitoring station at ES24A

Plate 8: Subsidence monitoring station at ES5B

ANNEXURE IX

Expenditure towards Environmental Protection Measures by Essar Oil and Gas Exploration and Production Ltd.
Compliance Period: April' 22 to September' 22

S. No.	Particular	Expenses (INR)
1	Installation of Water Bypass system at well pad (Capex)	31,15,457
2	Operation & maintenance of the RO system & pumps and water tanker services-Opex	1,04,57,432
3	Environment Monitoring Programme	6,30,000
4	Non Hazardous Waste Disposal	7,20,000
5	Bio-medical waste disposal	30,000
6	Green belt development	6,15,830
	TOTAL	**1,55,68,719**

ANNEXURE X

ESSAR
OIL & GAS

Essar Oil and Gas Exploration and Production Ltd
Essar House - Durgapur
Village & Post Office – Molandighi
Block - Kanksa
Durgapur Sub-Division
Dist. - Paschim Bardhhaman
Durgapur – 713212
West Bengal
India

CIN: U11203GJ2016PLC091903

E eogepl@essarenp.co.in
www.essar.com

EOGEPL/CBM- RG (E)/ HSE/ 2022/4097
Date: 28th September 2022

To
The Environmental Engineer and In-Charge
Durgapur Regional Office
West Bengal Pollution Control Board
Sahid Khudiram Sarani, City Centre
Durgapur, Paschim Bardhaman 713216

Sub: Submission of Environmental Statement (as Form V) for the FY 2021-22.

Dear Sir,

With due respect, please find attached herewith the Environmental Statement (as Form V) for the FY 2021-22 of Raniganj East CBM Block- RG (E)- CBM-2001/1, Durgapur, West Bengal of Essar Oil and Gas Exploration and Production Limited.

Thanking you,

For Essar Oil and Gas Exploration and Production Limited

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

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

Enclosed: i) Environmental Statement (Form V), FY 2021-22.
ii) Annexure- I, II, III, IV, V and VI

Cc to
1. Senior Environmental Engineer, Head Office, WBPCB, Kolkata
2. The Regional Director, IRO, MOEFCC, IB -194, Sector III, Salt Lake , Kolkata

FORM-V
(See rule 14)

Environmental Statement for the financial year ending with 31st March 2022

PART- A

i. **Name and address of the owner/occupier of the industry operation or process.**
Mr. Pankaj Kalra – Mines Owner, Raniganj East CBM Project-Durgapur
Essar Oil and Gas Exploration and Production Limited,
3rd Floor, Essar House, 11 K. K. Marg, Mahalaxmi, Mumbai-400034, Maharashtra

ii. **Industry category Primary-(STC Code) :**Coal Bed Methane (Exploration & Production)
Secondary- (STC Code)

iii. **Production Capacity-** ~ 52,200,000 m3/month

iv. **Year of establishment-** Established in year 2008-09.

v. Date of the last environmental statement submitted: 09-09-2021

PART - B

Water and Raw Material Consumption:

i. Water consumption in m^3/d

Process: Nil

Cooling: Not applicable

Domestic: 16 m^3 per day

Sr. No.	Name of Products	Process water consumption per unit of products	
		During the previous financial year	During the current financial year
1	Coal Bed Methane	Nil	Nil

ii. Raw material consumption

Sr. No.	*Name of raw materials**	Name of Products	Consumption of raw material per unit of Output	
			During the previous financial year (2020-2021)	During the current financial year (2021-2022)
1	*Main raw material during drilling phase- Water based mud.*		No drilling operation	No drilling operation

* Industry may use codes if disclosing details of raw material would violate contractual obligations, otherwise all industries have to name the raw materials used.

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

PART- C

Pollution discharged to environment/unit of output

(Parameter as specified in the consent issued)

<table>
<tr><th>Sr. No.</th><th>Parameter</th><th>Pollutants Quantity of Pollutants discharged (mass/day)</th><th>Concentration of Pollutants discharged (mass/volume)</th><th>Percentage of variation from prescribed standards with reasons</th></tr>
<tr><td>A</td><td>Water</td><td>TSS- 0.301 kg./day
BOD- < 0.079 kg./day
COD- < 0.483 kg./day
Oil & Grease- < 0.057 kg./day</td><td>
<table>
<tr><th>Parameter</th><th>MCS</th><th>GGS#1</th><th>GGS#2</th><th>Gopalpur Warehouse</th></tr>
<tr><td>TSS (mg/l)</td><td>14</td><td>22</td><td>24</td><td>91</td></tr>
<tr><td>BOD (mg/l)</td><td><2</td><td>25</td><td>28</td><td>24</td></tr>
<tr><td>COD (mg/l)</td><td><8</td><td>156</td><td>180</td><td>160</td></tr>
<tr><td>O&G (mg/l)</td><td><5</td><td><5</td><td><5</td><td>8</td></tr>
</table>
</td><td>No positive variation identified. All parameters are within the specified limit. (Annexure- I)</td></tr>
<tr><td>B</td><td>Air</td><td>Conc. NOx + NMHC - 382.53 g/day.
Conc. Carbon Monoxide - 360.19 g/day.
Conc. Particulate Matter- 51.105 g/day</td><td>
<table>
<tr><td colspan="2">One sample stack report provided.
Stack No.-055, MCS, Capacity- 250 KVA GG Set.</td></tr>
<tr><td>Total Conc. Nox + NMHC , (g/Kw-hr)</td><td>0.0921</td></tr>
<tr><td>Concentration of Carbon Monoxide, (g/Kw-hr)</td><td>0.08</td></tr>
<tr><td>Concentration of Particulate Matter, (g/Kw-hr)</td><td>0.00</td></tr>
</table>
</td><td>No positive variation identified. All parameters are within specified limit. (Annexure- II)</td></tr>
</table>

PART- D

HAZARDOUS WASTES

(As specified under Hazardous & Other Waste (Management & Transboundary Movement) Rules, 2016).

Sr. No	Area	Hazardous Wastes	Total Quantity (Kg.)	
			During the previous financial year (2020-2021)	During the current financial year (2021-2022)
1	From Process	1. Used Oil	32.97 KL	13.86 KL
		2. Oil contaminated Waste	1.9 MT	3.45 MT
		3. Oil Filter	00	3.485 MT
		4. Used small battery	00	0.46 Mt
		5. Silica Gel	00	0.665 MT
2	From Pollution Control Facilities (RO Plant)	1. Used RO Membrane Filter	1.25 MT	3 MT

PART - E

SOLID WASTES:

Sr. No	Area	Solid Wastes	Total Quantity (Kg.)	
			During the previous financial year	During the current financial year
A	From Process	Nil	No drilling Operation	No drilling Operation
B	From Pollution Control Facilities (RO Plant)	NA	NA	NA
C	1. Quantity recycled or re-utilized within the unit. 2. Solid (recyclable and Reusable) 3. Disposed		1. 00 2. 19.465 MT 3. 3.965 MT	1. 00 2. 17.4 MT 3. 17.6 MT **(Annexure- III)**

PART - F

Please specify the characteristics (in terms of concentration and quantum) of hazardous as well as solid wastes and indicate disposal practice adopted for both these categories of wastes.

Sr. No.	Types of Waste	Quantity	Mode of Disposal
1	Used Oil	13.86 KL	**Address:** Inspec Oils Ltd. A/122, Phase-III, Block-A, Kalyani, Nodia. **(Annexure- IV)**
2	Oil contaminated waste, Oil Filter, R.O. Membrane Filter, Silica gel, Small used battery	11.015 MT	Disposed off through TSDF, Saltora, Bankura **Address:** West Bengal Waste Management Limited, Saltora, Bankura, Pin-722158. **(Annexure- V)**

PART- G

Impact of the pollution control measures taken on conservation of natural resources and consequently on the cost of production.

1. Reuse of produced water in dust suppression and as utilities.
2. Gas based Generator Sets used at well sites and facilities (i.e. GGS 1, 2, 3, 4 and MCS).

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

3. Connected all well pads with GGS/MCS and Customer end with CGS through pipeline. The Pipeline is also connected with the GAIL pipeline network (as a part of Urja Ganga Pipeline Project). Maximum Sale of Coal bed Methane Gas and target to achieve "Zero" the Gas flaring.
4. Efficiently operational of RO Plant (Capacity- 6900 KLD) for the treatment of Produced water generated through CBM production wells. After RO treatment of produced water, the water quality satisfying the specified discharge limit (as per the Notification No. - G.S.R 546 (E) dated 30.08.2005) for discharging to Kunur Nala. **(Annexure- VI)**

PART - H

Additional measures/investment proposal for environmental protection including abatement of pollution.

1. Regular environmental monitoring done through NABL/WBPCB approved laboratory for the monitoring of Ambient Air, Noise level, GG/DG set Stack emission and sampling & analysis of Produced water, Surface Water and Ground water quality.
2. Waste segregation and handling has already been adopted through 3 bin waste management system and disposed/ recycled through authorized agency at regular interval.
3. Green belt development is our ongoing process, we have planted 250 more native species saplings by the FY 2021-22 those are already grown up.

PART - I

<u>Any Other Particulars for improving the Quality of the Environment</u>:

ESSAR OIL AND GAS EXPLORATION AND PRODUCTION LTD. (EOGEPL) is always endeavor to socio-economic development by adopting of clean and environment friendly technology.

EOGEPL has already initiated and maintained the dust and smoke free cooking technology to an ICDS center of Village- Dhabani, where CBM gas is used for cooking of mid-day meal for more than 80 children's.

This efficient innovative socio-economic development is apprised by the local administration as well as villagers also.

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

Annexure- I

S. No.	Parameter	Unit	CTO Limit for Discharge of Environmental Pollutants (Inland surface water)	MCS- Malandighi	GGS#001 Khatgoria Surface Drain	GGS#002 Akandara Surface Drain	Gopalpur Warehouse Surface Drain
			Date	27.11.2021	27.11.2021	27.11.2021	27.11.2021
1	pH at 27ºC	---	5.5 to 9.0	6.8	6.9	6.82	6.63
2	Total Suspended Solids	mg/l	100	14	22	24	91
3	Biochemical Oxygen Demand	mg/l	30	2	25	28	24
4	Chemical Oxygen Demand	mg/l	250	8	156	180	160
5	Oil & Grease	mg/l	10	5	5	5	8

Annexure- II

APRIL'21 STACK (PART-1)														
Date of Sampling	01.04.2021	01.04.2021	01.04.2021	01.04.2021	01.04.2021	01.04.2021	01.04.2021	01.04.2021	01.04.2021	01.04.2021	02.04.2021	02.04.2021	02.04.2021	02.04.2021
SL. NO. OF STACKS	**NO.001**	**NO.002**	**NO.003**	**NO.004**	**NO.005**	**NO.006**	**NO.007**	**NO.008**	**NO.009**	**NO.010**	**NO.011**	**NO.012**	**NO.013**	**NO.014**
Site Name	GGS - 002	GGS - 002	EDD - 052	EDD - 050	EDD - 050	EDG - 077	EDC - 413	EDG - 075	EDD - 049	EDC - 411	EDD - 053	EDD - 407	EDD - 429	EDH - 029
Village Name	AKANDARA	AKANDARA	PRATAPPUR	PRATAPPUR	PRATAPPUR	KAMALPUR	PARULIA	PARULIA	PRATAPPUR	BANSIA	NACHAN	JAMGORA	JAMGORA	DHABANI
Stack connected to	125 KVA GG Set	125 KVA DG Set	AL125 KVA GG Set	CU 125 KVA GG Set - 01	125 KVA GG Set - 03	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	50 KVA GG Set
Emission due to	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	3.65 m.	4.26 m.	4.57 m.	5.18 m.	3.65 m.	3.96 m.	3.96 m.	4.11 m.	4.26 m.	4.57 m.	4.03 m.	4.03 m.	4.26 m.	4.57 m.
Height of the sampling point from ground level	3.04 m.	3.65 m.	3.65 m.	4.76 m.	3.04 m.	3.35 m.	3.65 m.	3.35 m.	3.65 m.	3.65 m.	3.35 m.	3.65 m.	3.65 m.	3.96 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m	0.1015 m	0.1015 m.
Fuel used	CBM	HSD	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM
Capacity	125 KVA GG Set	125 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	50 KVA GG Set
Temperature of emission, (deg. C)	102	106	110	132	130	98	122	106	112	118	110	74	108	76
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	9.44	10.95	11.00	10.64	11.30	10.82	11.85	12.24	11.02	10.41	11.66	9.01	10.30	9.13
Quantity of gas flow, (Nm^3/hr)	211.96	242.97	243.27	222.30	236.81	246.13	252.90	273.98	241.48	225.35	257.75	219.30	228.47	224.67
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1364	0.1542	0.1514	0.1211	0.1321	0.1636	0.1448	0.1719	0.1462	0.1326	0.1605	0.2244	0.1426	0.2255
Concentration of Carbon Monoxide, (g/Kw-hr)	0.13	0.15	0.15	0.13	0.15	0.15	0.17	0.17	0.14	0.14	0.15	0.23	0.15	0.23
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annexure- II

APRIL STACK'21 (PART-2)														
Date of Sampling	02.04.2021	02.04.2021	02.04.2021	02.04.2021	02.04.2021	03.04.2021	03.04.2021	03.04.2021	03.04.2021	03.04.2021	03.04.2021	03.04.2021	03.04.2021	03.04.2021
SL. NO. OF STACKS	**NO.015**	**NO.016**	**NO.017**	**NO.018**	**NO.019**	**NO.020**	**NO.021**	**NO.022**	**NO.023**	**NO.024**	**NO.025**	**NO.026**	**NO.027**	**NO.028**
Site Name	EDH-033	EDH-064	EDH-044	GGS -001	GGS - 1	EDD - 007	EDD - 006	EDD - 011	EDD - 004	EDD - 012	EDD-021	EDD-008	EDD-005	EDE-001
Village Name	LABNAPARA	LABNAPARA	AKANDARA	KHATGORIA	KHATGORIA	GOPEDANGA	BARGORIA	BARGORIA	BARGORIA	KANTABERIA	JAMBON	JAMBON	JATGORIA	JATGORIA
Stack connected to	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	180 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	3.96 m.	5.18 m.	3.96 m.	4.87 m.	4.87 m.	3.65 m.	3.35 m.	3.65 m.	4.26 m.	6.09 m.	3.96 m.	4.52 m.	4.57 m.	3.96 m.
Height of the sampling point from ground level	3.35 m.	4.57 m.	3.35 m.	3.65 m.	3.65 m.	3.04 m.	3.04 m.	3.04 m.	3.65 m.	4.87 m.	3.35 m.	3.96 m.	3.96 m.	3.65 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.127 m	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m
Fuel used	CBM	CBM	CBM	CBM	HSD	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM
Capacity	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	180 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Temperature of emission, (deg. C)	103	124	118	128	142	114	126	128	117	134	122	132	126	86
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	11.56	10.49	11.48	10.58	11.45	9.61	11.27	10.89	10.47	11.37	10.10	12.03	10.54	9.26
Quantity of gas flow, (Nm^3/hr)	260.25	222.83	246.36	221.82	231.73	209.25	236.70	229.70	224.25	234.80	215.91	250.90	223.31	217.97
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1674	0.1278	0.1448	0.1238	0.1037	0.1266	0.1355	0.1282	0.1320	0.1279	0.1237	0.1368	0.1272	0.1597
Concentration of Carbon Monoxide, (g/Kw-hr)	0.16	0.14	0.15	0.14	0.12	0.13	0.14	0.13	0.13	0.14	0.13	0.14	0.13	0.12
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annexure- II

APRIL STACK'21 (PART-3)														
Date of Sampling	05.04.2021	05.04.2021	05.04.2021	05.04.2021	05.04.2021	07.04.2021	07.04.2021	07.04.2021	07.04.2021	07.04.2021	07.04.2021	07.04.2021	07.04.2021	08.04.2021
SL. NO. OF STACKS	**NO.029**	**NO.030**	**NO.031**	**NO.032**	**NO.033**	**NO.034**	**NO.035**	**NO.036**	**NO.037**	**NO.038**	**NO.039**	**NO.040**	**NO.041**	**NO.042**
Site Name	EDE-019	EDD-025	EDE-002	EDE-061	EDE-043	EDD - 003	EDD - 003	EDD - 015	EDD - 017	EDD - 022	EDD - 022	EDD - 022	EDD - 401	CGS
Village Name	JATGORIA	JATGORIA	JATGORIA	JATGORIA	JATGORIA	BARGORIA	BARGORIA	BARGORIA	PRATAPPUR	GOPEDANGA	GOPEDANGA	GOPEDANGA	KHATGORIA	BANSKOPA
Stack connected to	50 KVA GG Set	50 KVA GG Set	50 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA DG Set	125 KVA GG Set	125 KVA DG Set	125 KVA DG Set	125 KVA DG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	50 KVA DG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of HSD	Combustion of HSD	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	3.60 m.	3.60 m.	4.26 m.	3.96 m.	4.57 m.	4.26 m.	4.87 m.	4.57 m.	4.57 m.	4.57m.	4.57 m.	3.65 m.	4.57 m.	3.96 m.
Height of the sampling point from ground level	3.35 m.	3.35 m.	3.65 m.	3.35 m.	3.35 m.	3.04 m.	3.96 m.	3.65 m.	3.65 m.	3.65 m.	3.65 m.	3.04 m.	3.65 m.	3.35 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m	0.1015 m.	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m	0.1015 m	0.1015 m.
Fuel used	CBM	CBM	CBM	CBM	CBM	HSD	CBM	HSD	HSD	HSD	CBM	CBM	CBM	HSD
Capacity	50 KVA GG Set	50 KVA GG Set	50 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA DG Set	125 KVA GG Set	125 KVA DG Set	125 KVA DG Set	125 KVA DG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	50 KVA DG Set
Temperature of emission, (deg. C)	70	62	72	70	112	116	138	140	134	142	132	64	122	71
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	9.06	8.93	8.68	8.26	10.33	11.10	12.09	12.5	11.35	11.49	10.96	8.18	11.19	9.79
Quantity of gas flow, (Nm^3/hr)	223.75	225.58	213.20	202.96	226.48	240.91	249.10	255.30	235.53	233.9	229.16	204.6	239.22	294.69
Total Conc. Nox + NMHC , (g/Kw-hr)	0.2405	0.2571	0.2182	0.2187	0.1386	0.1440	0.1328	0.1360	0.1283	0.1229	0.1256	0.2328	0.1384	0.3081
Concentration of Carbon Monoxide, (g/Kw-hr)	0.19	0.18	0.18	0.17	0.13	0.15	0.15	0.15	0.14	0.13	0.13	0.16	0.11	0.27
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.13	0.00	0.15	0.13	0.13	0.00	0.00	0.00	0.19

Annexure- II

APRIL STACK'21 (PART-4)												
Date of Sampling	08.04.2021	08.04.2021	08.04.2021	08.04.2021	08.04.2021	08.04.2021	09.04.2021	09.04.2021	09.04.2021	09.04.2021	09.04.2021	09.04.2021
SL. NO. OF STACKS	**NO.043**	**NO.044**	**NO.045**	**NO.046**	**NO.047**	**NO.048**	**NO.049**	**NO.050**	**NO.051**	**NO.052**	**NO.053**	**NO.054**
Site Name	CGS	MCS	EDI-036	EDI-115	EDI-039	EDI-032	WAREHOUSE	EDN-162	EDI-038	GGS-4	EDI-120	EDI-120
Village Name	BANSKOPA	MALANDIGHI	AKANDARA	SARASWATIGUNJ	SARASWATIGUNJ	AKANDARA	GOPALPUR	PATHARDIHA	SARASWATIGUNJ	GOPALPUR	HARIKI	HARIKI
Stack connected to	50 KVA GG Set	125 KVA DG Set	125 KVA GG Set	50 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA DG Set	50 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA DG Set
Emission due to	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of HSD	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.57 m.	4.87 m.	5.91 m.	4.57 m.	4.26 m.	4.21 m.	4.87 m.	3.80 m.	4.87 m.	6.70 m.	3.76 m.	3.91 m.
Height of the sampling point from ground level	3.96 m.	3.65 m.	3.04 m.	3.65 m.	3.65 m.	2.43 m.	3.65 m.	3.65 m.	4.26 m.	3.04 m.	3.04 m.	2.43 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m	0.1015 m.	0.1015 m.
Fuel used	CBM	HSD	CBM	HSD	CBM	CBM	CBM	HSD	CBM	CBM	CBM	HSD
Capacity	50 KVA GG Set	125 KVA DG Set	125 KVA GG Set	50 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA DG Set	50 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA DG Set
Temperature of emission, (deg. C)	64	132	110	96	116	118	128	94	112	126	108	84
Barometric pressure, (mm of Hg)	756	756	756	756	756	756	756	756	756	756	756	756
Velocity of gas in stack, (m/Sec)	8.96	13.75	11.02	9.38	11.04	11.82	12.61	8.55	11.05	11.94	10.30	9.97
Quantity of gas flow, (Nm^3/hr)	225.07	285.61	247.82	215.35	239.65	254.91	264.54	197.05	243	251.77	228.15	236.11
Total Conc. Nox + NMHC , (g/Kw-hr)	0.2561	0.1572	0.1544	0.1835	0.1435	0.1499	0.1484	0.1706	0.1487	0.1428	0.1422	0.2041
Concentration of Carbon Monoxide, (g/Kw-hr)	0.24	0.13	0.11	0.16	0.07	0.13	0.15	0.27	0.14	0.08	0.12	0.20
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.14	0.00	0.21	0.00	0.00	0.15	0.17	0.00	0.00	0.00	0.23

Annexure- II

NOV'21 STACK (PART-1)														
Date of Sampling	15.11.2021	15.11.2021	15.11.2021	15.11.2021	15.11.2021	16.11.2021	16.11.2021	16.11.2021	16.11.2021	17.11.2021	17.11.2021	17.11.2021	17.11.2021	17.11.2021
SL. NO. OF STACKS	**NO.055**	**NO.056**	**NO.057**	**NO.058**	**NO.059**	**NO.060**	**NO.061**	**NO.062**	**NO.063**	**NO.064**	**NO.065**	**NO.066**	**NO.067**	**NO.068**
Site Name	MCS	EDI -123	EDI-070	EDI-040	EDI-042	EDI-041	EDN-162	EDI-184	EDE-009	EDD - 017	GGS - 405	GGS - 404	GGS - 403	EDD - 015
Village Name	MCS MALANDIGHI	LOHAGURI	SARASWATIGUNJ	SARASWATIGUNJ	SARASWATIGUNJ	SARASWATIGUNJ	KULDIHA	GOPALPUR	JATGORIA	PRATAPPUR	KHATGORIA	KHATGORIA	KHATGORIA	BARGORIA
Stack connected to	250 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set - 03	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.00 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	2.44 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	3.05 m.
Height of the sampling point from ground level	4.00 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	2.44 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	3.05 m.
Diameter of the stack at Sampling Point	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM
Capacity	250 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set
Temperature of emission, (deg. C)	142	172	152	148	148	188	173	182	184	162	172	164	160	164
Barometric pressure, (mm of Hg)	757	757	757	757	757	757	757	757	757	757	757	757	757	757
Velocity of gas in stack, (m/Sec)	11.49	10.32	10.08	9.15	8.2	7.42	8.43	8.53	8.55	11.77	10.29	11.79	10.16	11.78
Quantity of gas flow, (Nm^3/hr)	232.54	195.97	211.9	182.36	164.07	136.32	159.02	158.58	158.15	229.17	196.19	228.27	198.45	229.35
Total Conc. Nox + NMHC , (g/Kw-hr)	0.0921	0.1168	0.1332	0.1194	0.1113	0.0833	0.1054	0.1052	0.1016	0.1573	0.1300	0.1514	0.2433	0.1573
Concentration of Carbon Monoxide, (g/Kw-hr)	0.08	0.12	0.14	0.11	0.11	0.08	0.11	0.10	0.09	0.14	0.11	0.10	0.26	0.15
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annexure- II

NOV'21 STACK (PART-2)

Date of Sampling	17.11.2021	17.11.2021	17.11.2021	18.11.2021	18.11.2021	18.11.2021	18.11.2021	18.11.2021	18.11.2021	19.11.2021	19.11.2021	19.11.2021	19.11.2021	19.11.2021
SL. NO. OF STACKS	**NO.069**	**NO.070**	**NO.071**	**NO.072**	**NO.073**	**NO.074**	**NO.075**	**NO.076**	**NO.077**	**NO.078**	**NO.079**	**NO.080**	**NO.081**	**NO.082**
Site Name	EDD - 010	EDD - 03	EDE-060	EDD-020	EDE-013	EDE-018	EDE-048	EDE-01	EDD - 022	PGS - 660	PGS - 716	EDD - 409	EDG - 074	EDC - 072
Village Name	BARGORIA	BARGORIA	JATGORIA	JAMBON	JATGORIA	JATGORIA	JATGORIA	JATGORIA	GOPEDANGA	GOPALPUR	GOPALPUR	PRATAPPUR	PARULIA	NACHAN
Stack connected to	40 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA DG Set	177.5 KW COMPRESSOR NO.2	177.5 KW COMPRESSOR NO.3	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of HSD	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	1.52 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.87 m.	4.26 m.	4.26 m.	1.52 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	1.83 m.
Height of the sampling point from ground level	1.52 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.87 m.	4.26 m.	4.26 m.	1.52 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	1.83 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	HSD	CBM	CBM	CBM	CBM	CBM
Capacity	40 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA DG Set	177.5 KW COMPRESSOR NO.2	177.5 KW COMPRESSOR NO.3	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Temperature of emission, (deg. C)	148	160	168	158	160	164	165	160	140	265	306	164	165	178
Barometric pressure, (mm of Hg)	757	757	757	757	757	757	757	757	757	757	757	757	757	757
Velocity of gas in stack, (m/Sec)	9.16	11.72	11.05	11.71	10.15	11.01	9.34	10.18	9.94	9.27	9.61	11.03	10.24	11.98
Quantity of gas flow, (Nm^3/hr)	184.84	228.71	212.18	127.71	198.88	213.39	180.35	198.31	205.22	327.81	315	213.47	197.51	224.69
Total Conc. Nox + NMHC , (g/Kw-hr)	0.2943	0.1574	0.3457	0.0803	0.1297	0.1343	0.1155	0.1340	0.1403	0.1349	0.1244	0.1393	0.1220	0.1341
Concentration of Carbon Monoxide, (g/Kw-hr)	0.29	0.14	0.24	0.08	0.13	0.13	0.10	0.12	0.12	0.15	0.14	0.13	0.12	0.13
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.00	0.00	0.00	0.00	0.00

NOV'21 STACK (PART-3)														
Date of Sampling	19.11.2021	19.11.2021	19.11.2021	20.11.2021	20.11.2021	20.11.2021	20.11.2021	20.11.2021	20.11.2021	25.11.2021	26.11.2021	26.11.2021	26.11.2021	26.11.2021
SL. NO. OF STACKS	**NO.083**	**NO.084**	**NO.085**	**NO.086**	**NO.087**	**NO.088**	**NO.089**	**NO.090**	**NO.091**	**NO.092**	**NO.093**	**NO.094**	**NO.095**	**NO.096**
Site Name	EDC - 054	EDH-033	EDH - 029	WTP EDH - 064	EDH - 058	EDH - 031	EDD - 026	EDD - 406	EDD - 065	PGS - 577	EDE-024	EDH-030	EDD-008	EDH-034
Village Name	NACHAN	LABNAPARA	DHABANI	AKANDARA		DHABANI	KANTABERIA	JAMGORA	JAMUA	GOPALPUR	JAMBON	AKANDARA	JAMBON	AKANDARA
Stack connected to	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	177.5 KW COMPRESSOR NO.1	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Emission due to	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM	Combustion of CBM
Material of construction of stack	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.	M.S.
Shape of stack	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular	Circular
Height of the stack from ground level	4.26 m.	4.26 m.	3.65 m.	3.05 m.	4.26 m.	3.05 m.	4.26 m.	1.82 m.	3.05 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.
Height of the sampling point from ground level	4.26 m.	4.26 m.	3.65 m.	3.05 m.	4.26 m.	3.05 m.	4.26 m.	1.82 m.	3.05 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.	4.26 m.
Diameter of the stack at Sampling Point	0.1015 m	0.1015 m.	0.076 m.	0.1015 m	0.1015 m.	0.1015 m	0.1015 m.	0.1015 m	0.1015 m	0.153 m.	0.1015 m.	0.1015 m.	0.1015 m.	0.1015 m.
Fuel used	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CBM	CNG	CBM	CBM	CBM	CBM
Capacity	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA DG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	50 KVA GG Set	125 KVA GG Set	177.5 KW COMPRESSOR NO.1	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set	125 KVA GG Set
Temperature of emission, (deg. C)	168	188	178	183	188	182	196	156	186	285	150	148	148	152
Barometric pressure, (mm of Hg)	757	757	757	757	757	757	757	757	757	757	757	757	757	757
Velocity of gas in stack, (m/Sec)	10.25	9.59	10.36	9.54	9.59	10.44	10.58	10.95	10.46	14.16	10.88	11.61	10.86	10.90
Quantity of gas flow, (Nm^3/hr)	196.82	175.45	109.33	177.14	175.73	194.02	190.27	216.80	193.27	488.22	214.03	229.98	214.63	213.19
Total Conc. Nox + NMHC , (g/Kw-hr)	0.1237	0.1000	0.1249	0.1024	0.1074	0.1162	0.1127	0.2706	0.1199	0.1987	0.1480	0.1505	0.1405	0.1419
Concentration of Carbon Monoxide, (g/Kw-hr)	0.12	0.11	0.13	0.11	0.11	0.12	0.11	0.32	0.12	0.22	0.13	0.14	0.13	0.13
Concentration of Particulate Matter, (g/Kw-hr)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Annexure- III

SOLID WASTE MANAGEMENT RECORD FY 2021-22														
		QUANTITY (MONTHLY)												Yearly
Sl. No.	**Category of waste**	**Apr.'21**	**May'21**	**June'21**	**July'21**	**Aug.'21**	**Sept.'21**	**Oct.'21**	**Nov.;21**	**Dec.'21**	**Jan.'22**	**Feb.'22**	**Mar.'22**	**Total**
1	Bio-degradable waste	1190	940	850	920	1280	1210	1790	1820	1800	1630	2010	2160	**17600**
2	Recyclable Waste	1360	970	1100	1410	1140	2260	2285	1770	1740	1410	1010	940	**17395**
Monthly Total		**2550**	**1910**	**1950**	**2330**	**2420**	**3470**	**4075**	**3590**	**3540**	**3040**	**3020**	**3100**	

Grand Total (FY 2021-22)	**34995**

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. AN 81B Sec-2B. Martin Luther King Sarani, Paschanagar, 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)	Tarpec Oils Limited A/122, Phase-III. Block-A- Kalyani
5.	Type of vehicle :	(Truck / Tanker / Special Vehicle)
6.	Transporter's registration No. :	182/25 (HW)- 2545/2009.
7.	Vehicle registration No. :	WB-23C-2929.
8.	Receiver's name and mailing address (including Phone No. and e-mail) :	Tarpec Oils Limited A/122, Phase-III Block-A Kalyani. Nadia
9.	Receiver's authorisation No. :	182/25 (HW)- 2545/2009
10.	Waste description :	Used Oil
11.	Total quantity : No. of Containers :	13.860 m³ or MT / 2205 66 drum Nos.
12.	Physical form :	(~~Solid~~ / ~~Semi-Solid~~ / ~~Sludge~~ / Oily / ~~Tarry~~ / ~~Slurry~~ / Liquid)
13.	Special handling instructions and additional information :	Handle with Case
14.	Sender's Certificate	I hereby declare that the contents of the consignment are fully 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 : S. RAY	Signature : Month 12 Day 01 Year 2021
15.	Transporter acknowledgement of receipt of Wastes	
	Name and stamp : Manoj Das Gupta.	Signature : Month 12 Day 01 Year 2021
16.	Receiver's certification for receipt of hazaqrdous and other waste	
	Name and stamp :	Signature : Month Day Year 2021

FORM 10

2nd Copy

WEST BENGAL WASTE MANAGEMENT LIMITED

J.L. No. – 80, Vill. : Pabayan, P.O. : Bishjore, P.S. : Saltora, Bankura, W.B. 722158

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 AN 518, SECTOR-2, MARTIN LUTHER KING SARANI, BIDHAN NAGAR, DURGAPUR-713212
2	Sender's authorization No. :	15/25 (HW) - 244912008
3	Manifest Document No. :	1 017
4	Transporter's name and address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. – 80, Mouza : Pabayan, P.S. : Saltora, Dist. : Bankura West Bengal, Pin- 722158
5	Type of vehicle :	(Truck/Tanker/Special Vehicle)
6	Transporter's registration No. :	1-MD(E)/X/06
7	Vehicle registration No. :	WB 31N 0062
8	Receiver's name and mailing address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. – 80, Mouza : Pabayan, P.S. : Saltora, Dist. : Bankura West Bengal, Pin- 722158
9	Receiver's authorization No. :	
10	Waste description :	OIL CONTAMINATED WASTE, FILTER, RO MEMBRANE
11	Total quantity No. of Containers :	5.260 ..... m3 or MT ..... Nos.
12	Physical form :	**(Soild/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)**
13	Special handling instructions and additional information	Safety Shoe, Hand gloves, goggle, Helmets
14	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping categorized, packed, marked and name and are labeled and are in all respects in proper conditions for transport by road according to applicable National Government Regulations.
	Name and stamp	Signature — Day: 07 Month: 12 Year: 2021
15	Transporter acknowledgement of receipt of Wastes :	
	Name and stamp	Signature — Day: 07 Month: 12 Year: 2021
16	Receiver's certification for receipt of hazardous and other waste :	
	Name and stamp	Signature — Day: Month: Year:

1. White Colour forwarded to WBPCB by HzW Sender
2. Yellow Colour retained by HzW sender
3. Pink Colour retained by HzW Receiver
4. Orange Colour retained by transporter
5. Green Colour forwarded to WBPCP ofter disposal by HzW Receiver
6. Blue Colour returned to sender after disposal by HzW Receiver

FORM 10

2nd Copy

WEST BENGAL WASTE MANAGEMENT LIMITED

J.L. No. – 80, Vill. : Pabayan, P.O. : Bishjore, P.S. : Saltora, Bankura, W.B. 722158

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 AN 518 . SECTOR-2, MARTIN LUTHER KING SARANI , BIDHANNAGAR , DURGAPUR - 713212
2	Sender's authorization No. :	15/25 (HW) - 244912008
3	Manifest Document No. :	1 082
4	Transporter's name and address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. – 80, Mouza : Pabayan, P.S. : Saltora, Dist. : Bankura West Bengal, Pin- 722158
5	Type of vehicle :	(Truck/Tanker/Special Vehicle)
6	Transporter's registration No. :	1-MD(E)/X/06
7	Vehicle registration No. :	WB 31N 00 98
8	Receiver's name and mailing address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. – 80, Mouza : Pabayan, P.S. : Saltora, Dist. : Bankura West Bengal, Pin- 722158
9	Receiver's authorization No. :	
10	Waste description :	OIL Contaminated waste. Filter. silica.) Battery
11	Total quantity No. of Containers :	2.650 ..... m3 or MT ..... Nos.
12	Physical form :	**(Soild/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)**
13	Special handling instructions and additional information	Safety shoe, Hand gloves, goggle, Helmets
14	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping categorized, packed, marked and name and are labeled and are in all respects in proper conditions for transport by road according to applicable National Government Regulations.
	Name and stamp	Signature — Day: 07 Month: 01 Year: 2022
15	Transporter acknowledgement of receipt of Wastes :	
	Name and stamp	Signature — Day: 07 Month: 01 Year: 2022
16	Receiver's certification for receipt of hazardous and other waste :	
	Name and stamp	Signature — Day: Month: Year:

1. White Colour forwarded to WBPCB by HzW Sender
2. Yellow Colour retained by HzW sender
3. Pink Colour retained by HzW Receiver
4. Orange Colour retained by transporter
5. Green Colour forwarded to WBPCP ofter disposal by HzW Receiver
6. Blue Colour returned to sender after disposal by HzW Receiver

FORM 10

2nd Copy

WEST BENGAL WASTE MANAGEMENT LIMITED

J.L. No. – 103, Mouza – Purba Srikrishnapur, P.O. & P.S. – Sutahata, PIN – 721635, Haldia, Dist. – Purba Medinipur, West Bengal

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 AN 518, SECTOR - 2, MARTIN LUTHER KING SARANI, BIDHAN NAGAR, DURGAPUR - 713212
2	Sender's authorization No. :	15125 (HW) - 249 912 008
3	Manifest Document No. :	1 15100
4	Transporter's name and address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. 103, Mouza Purba Srikrishnapur, P.O. & P.S. Sutahata, Haldia 721635 Dist. Purba Medinipur, West Bengal, Ph. No.-03224-278238 / 39 E-mail : wbwml_haldia@ramky.com
5	Type of vehicle :	(Truck/Tanker/Special Vehicle)
6	Transporter's registration No. :	1-MD(E)/X/06
7	Vehicle registration No. :	WB 31N 0098
8	Receiver's name and mailing address (including Phone No. and e-mail) :	**West Bengal Waste Management Limited** J.L. No. 103, Mouza Purba Srikrishnapur, P.O. & P.S. Sutahata, Haldia 721635 Dist. Purba Medinipur, West Bengal, Ph. No.-03224-278238 / 39 E-mail : wbwml_haldia@ramky.com
9	Receiver's authorization No. :	
10	Waste description :	OIL CONTAMINATED WASTE, FILTER, RO MEMBRANE,
11	Total quantity No. of Containers :	..... 3105 Kg ..... m3 or MT ..... Nos.
12	Physical form :	**(Soild/Semi-Solid/Sludge/Oily/Tarry/Slurry/Liquid)**
13	Special handling instructions and additional information	Safety Shoe, Hard Gloves, Goggles, Helmets
14	Sender's Certificate	I hereby declare that the contents of the consignment are fully and accurately described above by proper shipping categorized, packed, marked and name and are labeled and are in all respects in proper conditions for transport by road according to applicable National Government Regulations.
	Name and stamp	Signature — Day: 25 Month: 05 Year: 2021
15	Transporter acknowledgement of receipt of Wastes :	
	Name and stamp: Raj Kumar	Signature — Day: 25 Month: 05 Year: 2021
16	Receiver's certification for receipt of hazardous and other waste :	
	Name and stamp	Signature — Day: Month: Year:

1. White Colour forwarded to WBPCB by HzW Sender
2. Yellow Colour retained by HzW sender
3. Pink Colour retained by HzW Receiver
4. Orange Colour retained by transporter
5. Green Colour forwarded to WBPCP ofter disposal by HzW Receiver
6. Blue Colour returned to sender after disposal by HzW Receiv

Ground Water Level report of surrounding areas of CBM Ranigan project by EOGEPL
Compliance Period: April'22 to September'22

ANNEXURE XI

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	1.32
2	kalikapur	23°37.24.8"N	87°20.12.9"E	0.8	1.85	2.03	1.23
3	Dhabani	23°35'51.9"N	87°22.0.85"E	0.95	1.8	2.64	1.69
4	Bansia	23°37.34.3"N	87°19'00.1"E	0.76	0.97	2.71	1.95
5	Labnapara	23°35'05.36N	87°22'15.8"E	1.2	1.5	6.24	5.04
7	Akandara	23°34'46.1"N	87°23'0.13"E	0.65	1.85	5.56	4.91
8	Saraswatiganj	23°35'22.6"N	87°24'78.4"E	0.6	1.75	3.86	3.26
9	Ghtakdanga	23°34'14.7"N	87°24'30.8"E	1	2.4	4.95	3.95
10	Sarenga	23°31'36.22"N	87°24'58.12"E	1.01	1.67	5.53	4.52
11	Gopalpur	23°30'63.9"N	87°23'40.8"E	0.5	1.53	3.75	3.25
12	Jatgoria	23°36'97.03"N	87°23'43.02"E	0.6	1.8	3.5	2.9
13	Kantaberia	23°36'82.9"N	87°22'24.02"E	0.6	1.3	2.79	2.19
14	Bargoria	23°37'58.0"N	87°21'39.7"E	0.7	2.5	2.18	1.48