

HALF YEARLY
ENVIRONMENT CLEARANCE COMPLIANCE REPORT
OF
CLUSTER 8
J-11015/107/2011-IA.II(M)
FOR THE PERIOD OF
OCTOBER 2018 TO MARCH 2019



Eastern Coalfields Limited
(A subsidiary of Coal India Ltd.)



EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
Office of the Agent, Bhanora Group of Mines, Sripur Area
P.O Barabani, PIN: 713334, Dist. Burdwan (WB)

UNDERTAKING

Information provided in Half Yearly EC Compliance report for the period October, 2018 to March, 2019 in respect of the following mines in Cluster No. 8 is true to the best of my knowledge:

SI No.	Name of the mine	Name of the Manager	Signature of the Manager
1	Bhanora UG	Mine Closed	—
2	Girmint/KDI UG	Mine Closed	—

J. K. S.
24/4/19
MANAGER
BHANORA GR OF MINES



[Signature]
24/04
Agent/Project Proponent
Bhanora Group of Mines
(Signature with Seal)
Bhanora Group of Mines
Sripur Area, ECI




EASTERN COALFIELDS LIMITED
(A Subsidiary of Coal India Limited)
Office of the Agent, Ningha Group of Mines, Sripur Area
P.O Ningha, PIN: 713370, Dist. Burdwan (WB)


UNDERTAKING

Information provided in Half Yearly EC Compliance report for the period October, 2018 to March, 2019 in respect of the following mines in Cluster No. 8 is true to the best of my knowledge:

SI No	Name of the mine	Name of the Manager	Signature of the Manager
1	Sripur UG	Mine closed	-
2	Sripur Seam Incline UG	Shri Y. N. Prasad	 22/4/19
3	Ningha UG	Shri S. K. De	 22/4/19

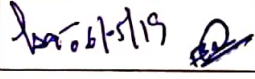
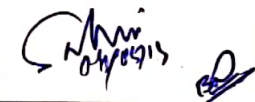
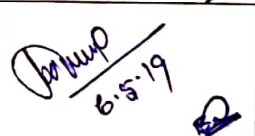
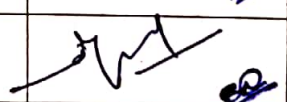
(No. 8/5/19)


8/5/19
AGENT
Ningha Group of Mines
Agent/Project Proponent
Ningha Group of Mines
(Signature with Seal)

<p>EASTERN COALFIELDS LIMITED (A Subsidiary of coal India Limited) Office of the General Manager Satgram Area, District : Paschim Burdwan P.O Devchandnagar Pin:713332 W.B Email: gm.satgram@gmail.com</p>		<p>ईस्टर्न कोलफील्ड लिमिटेड (कोल् इंडिया का सब्सिडियरी) महाप्रबंधक का कार्यालय-सातग्राम क्षेत्र जिला: पश्चिम बर्दमान पोस्ट ऑफिस: देवचंदनगर पिनकोड:713332 पश्चिमबंगाल ईमेल: gm.satgram@gmail.com</p>
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UNDERTAKING

Information provided in half yearly EC compliance report for the period Oct 18 to Mar 19 in respect of the following mines of Cluster 9 EC under Satgram area is true to the best of my knowledge:

SL NO.	Environmental Clearance	MINES	NAME OF THE CHIEF MANAGER/AGENT	SIGNATURE OF THE CHIEF MANAGER/AGENT
1	Cluster 9	Chapuikhas UG	Shri. Shyalmal Banerjee	
2	Cluster 9	Nimcha UG & Amkola OCP	Shri.S.C.Moitra	
3	Cluster 9	JK Nagar UG & OCPatch & Jemehari UG	Shri. Kamlesh Prasad	
4	Cluster 8	Satgram UG	Shri A.K Pal	

Date: 06.05.19

Name of the Project: Cluster No.8

Clearance letter No: J-11015/107/2011-IA-II. (M)

Period of Compliance Report: October, 2018- March, 2019

Specific Conditions:

SI No.	Conditions	Compliance Status																														
i.	The maximum production from the mine at any given time shall not exceed the limit as prescribed in the EC.	<p>Complied</p> <table border="1"> <thead> <tr> <th data-bbox="863 483 1150 629"><u>Mine</u></th> <th data-bbox="1150 483 1302 629"><u>Peak EC Capacity (MTPA)</u></th> <th data-bbox="1302 483 1493 629"><u>Production in MT (Oct'18 to Mar' 19)</u></th> </tr> </thead> <tbody> <tr> <td data-bbox="863 629 1150 707">Bhanora UG</td> <td data-bbox="1150 629 1302 707">0.30</td> <td data-bbox="1302 629 1493 707">Production Suspended</td> </tr> <tr> <td data-bbox="863 707 1150 786">Girmint UG</td> <td data-bbox="1150 707 1302 786">0.65</td> <td data-bbox="1302 707 1493 786">Production Suspended</td> </tr> <tr> <td data-bbox="863 786 1150 864">Sripur UG Mine</td> <td data-bbox="1150 786 1302 864">0.024</td> <td data-bbox="1302 786 1493 864">Production Suspended</td> </tr> <tr> <td data-bbox="863 864 1150 943">Sripur seam Incline UG</td> <td data-bbox="1150 864 1302 943">0.136</td> <td data-bbox="1302 864 1493 943">Production Suspended</td> </tr> <tr> <td data-bbox="863 943 1150 976">Ningha UG</td> <td data-bbox="1150 943 1302 976">0.10</td> <td data-bbox="1302 943 1493 976">0.01440</td> </tr> <tr> <td data-bbox="863 976 1150 1043">Mithapur west UG</td> <td data-bbox="1150 976 1302 1043">0.04</td> <td data-bbox="1302 976 1493 1043">Production suspended</td> </tr> <tr> <td data-bbox="863 1043 1150 1122">Mithpur OCP (29.2Ha)</td> <td data-bbox="1150 1043 1302 1122">0.30</td> <td data-bbox="1302 1043 1493 1122">Production not started</td> </tr> <tr> <td data-bbox="863 1122 1150 1155">Satgram UG</td> <td data-bbox="1150 1122 1302 1155">1.20</td> <td data-bbox="1302 1122 1493 1155">0.073022</td> </tr> <tr> <td data-bbox="863 1155 1150 1200">Total</td> <td data-bbox="1150 1155 1302 1200">2.75</td> <td data-bbox="1302 1155 1493 1200">0.087</td> </tr> </tbody> </table>	<u>Mine</u>	<u>Peak EC Capacity (MTPA)</u>	<u>Production in MT (Oct'18 to Mar' 19)</u>	Bhanora UG	0.30	Production Suspended	Girmint UG	0.65	Production Suspended	Sripur UG Mine	0.024	Production Suspended	Sripur seam Incline UG	0.136	Production Suspended	Ningha UG	0.10	0.01440	Mithapur west UG	0.04	Production suspended	Mithpur OCP (29.2Ha)	0.30	Production not started	Satgram UG	1.20	0.073022	Total	2.75	0.087
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ii.	The validity of the EC is for the life of the Mine or as specified in the EIA Notification, 2006, whichever is earlier.	Agreed																														
iii.	All safety measures shall be taken as per CMR, 1957 & related circulars.	All safety measures are being taken as per CMR- 1957 & related Circulars.																														
iv.	The production shall be within the same Mining Lease area.	The production is within the same Mining lease area.																														
v.	The OB shall be completely re-handled at the end of the mining and will be backfilled up to the ground level and covered with about meter thick topsoil and put to use. The Land shall be brought back for agriculture purpose	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.																														
vi.	Garland drains shall be provided	Garland drains have been provided.																														
vii.	Appropriate embankment shall be provided along the side of river/nallahs following near or adjacent to mine	NA since no river/nallah is flowing adjacent to mines.																														
viii.	Deep-rooted plants should be planted along the bunds of the agriculture fields	Deep rooted tree species planted which are as follows- Neem, Seemul, Karanch, Shisham, Arjun, Babool & Sirish																														
ix.	Possibility of mechanized loading at the siding be explored	Loading of coal at MS Railway Siding is being done through payloaders.																														

x.	Pollution Control Measures shall be effectively monitored and adequate mitigation measures shall be undertaken	Monitoring of Pollution control measures and mitigation measures is being done as per approved EMP
xi.	Coal Transportation in Pit: Underground Mine-coal tubs at faces are being hauled by tigger haulage; Opencast mine coal at surface is transported to the nearby coal depot by colliery dumpers through tippler, Surface to siding by dumper.	In underground mines: Coal tubs at faces are been hauled by tigger haulage and from there to railway siding at Jemehari by covered trucks to prevent spillage and control of coal dust emission. Mithapur OCP is only OCP under this cluster from which production is yet to start
xii.	Independent network of railway sidings inside cluster be developed. Railway sidings should be constructed at the earliest and till then proponent may use mechanically covered trucks for transportation of coal.	Transportation of coal from mine to MS railway siding is being done by tarpaulin covered trucks. Renovation of Bhanora Railway Siding is under process for Sripur Area.
xiii.	Three tier green belts shall be raised around the railway sidings and along the road sides to prevent dust and noise pollution.	Natural plantation is already present around the siding to prevent dust and noise pollution and no further plantation is possible due to non-availability of space at the siding. In addition to this siding is bounded by a thick brick wall of 10 feet height approx.
xiv.	Stowing and depillaring shall be as per the recommendations of the DGMS	Stowing and depillaring are being done as per the recommendations of the DGMS.
xv.	The proponent must comply with Raniganj Action Plan. The unstable areas within the cluster will be brought under plantation after the population residing over these areas is rehabilitated under the master plan for Raniganj Coalfield to be implemented by ADDA.	Noted and Agreed.
xvi.	Trees with deep rooted system should be planted so as to prevent soil erosion.	Deep rooted tree species planted are as follows- Neem, Seemul, Karanch, Shisham, Arjun, Babool & Sirish.
xvii.	Proponent should plant additional 10 Ha/ year over the next 10 years at various locations within this Cluster.	Noted and Agreed. Plantation has already been done as per the practice of normal plantation. Depending upon the availability of land further plantation will be done.
xviii.	River/ nallahs shall be desilted and restored back to functional state.	Garland drains and Catch drains and siltation sump of appropriate size has been constructed to arrest silt and sediment flows from soil, OB dump. The water so collected in the main sump within the mine is utilized for dust suppression in mine area, roads and green belt development. Garland drains and catch drains are regularly desilted and maintained properly. No discharge is done in river/nallah.
xix.	Wild life conservation plan be prepared and submitted to the MOEFCC with the approval of State Govt.	Wildlife Conservation Plan of Raniganj Coalfield is under preparation. The Chief Conservator of Forests South east Circle, West Bengal has been requested to prepare the plan.
xx.	Proponent shall use high resolution image of all clusters for evaluating land use, plantation etc.	Land use pattern and plantation is being monitored by satellite surveillance based on satellite imagery.
xxi.	Separate drainage pattern be provided.	Separate drainage pattern have been provided.
xxii.	Sand stowing must be used as recommended by CMPDIL.	Sand stowing is being used as recommended by CMPDIL.

xxiii.	Action plan for prevention and mitigation of subsidence be prepared and implemented.	Action plan for prevention and mitigation of subsidence has been prepared and implemented as per DGMS guidelines.
xxiv.	The OC Patches to be operated will be completely filled-up after exhaustion of reserves and reclaimed with plantation.	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.
xxv.	The OB shall be completely re-handled at the end of the mining	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.
xxvi.	There shall be no OB dump after the mining	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.
xxvii.	After completion of mining activities, the subsided areas shall be graded and planted upon.	Noted and agreed.
xxviii.	Coal Extraction shall also be optimized in areas where agricultural production is continuing. Some pillars shall be left below the agricultural land. No depillaring and coal extraction should be carried out below habitation, H.T. lines and beneath road, water bodies	Coal Extraction is being carried out as per DGMS permissions and guidelines.
xxix.	The land excavated after mining must be brought back to original condition for agricultural / plantation purpose.	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.
xxx.	Water discharged from the mine should be as good as surface drinking water.	Mine discharge is being monitored regularly by CMPDIL and found well within prescribed limits of MoEF Schedule. The mine water discharge from Ningha UG & SSI UG is treated by two Pressure filters of 10,000 & 5000 GPH Pump Capacity respectively. Also an RO plant of 5000 lt/Hr Capacity is installed in Ningha Colliery which treats mine water discharge from Ningha UG for drinking purposes in the surroundings under Sripur Area.
xxxi.	There shall be no final mine voids and OC quarry will be completely backfilled.	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.
xxii.	Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads and surroundings shall be continued till movement ceases completely. In case of observation of any high rate of subsidence movement, appropriate effective corrective measures shall be taken to avoid loss of life and material. Cracks shall be effectively plugged with ballast and clayey soil/suitable material	Regular monitoring of subsidence movement on the surface over and around the working area and impact on natural drainage pattern, water bodies, vegetation, structure, roads and surroundings is being done. No significant cracks have been observed till date.
xxiii.	If subsidence is found exceeding the permitted limits, then the landowners shall be adequately compensated with mutual agreement of the landowners.	Noted and agreed.
xxiv.	Water sprinkling system shall be provided to check fugitive dust emission from loading	Water sprinkling systems have been provided and major approach road has been blacktopped

	operations conveyor system, Haulage road, Transfer points etc. Major approach roads shall be black topped and properly maintained	and properly maintained.
xxv.	The CSR cost should be Rs. 5 per Tonne of Coal produced which should be adjusted as per the annual inflation.	As per the revised CSR policy of CIL, 2% of the avg. net profit of preceding three years is the norm for CSR activities in the entire ECL command area.
xxvi.	The mining in the existing mines should be phased out after expiry of the current mining lease and after reclamation of the mined out area. The operating mines may be analyzed and monitored for compliance of conditions, bearing with movement of wildlife and until such time they are closed/ phased out.	Noted and Agreed.
xvii.	Everybody in the core area should be provided with mask for protection against fugitive dust emissions.	In order to provide protection against fugitive dust emission, dust masks are being provided to people working in the core area.
xxviii.	Dust mask to be provided to everyone working in the mining area.	Dust mask have been provided to everyone working in the mining area.
xxix.	The supervisory staff should be held personally responsible for ensuring compulsory regarding wearing of dust mask in the core area.	Supervisory staff ensures compulsory wearing of the dust masks in the core area.
xl.	People working in the core area should be periodically tested for the lung diseases and the burden of cost on account of working in the coal mining area.	20 % of the work force is covered under periodic medical examination each year including lung diseases the cost of which is borne by the company.
xli.	The mining area should be surrounded by green belt having thick closed thick canopy of the tree cover.	Most of the mines in this cluster are UG mines and as such pollution load is concentrated in mine working faces. Mithapur OCP is only OCP under this cluster from which production is yet to start. The OCP shall be surrounded by green belt having thick closed thick canopy of the tree cover once started.
xlii.	Besides carrying out regular periodic health check-up of their workers, 10% of the workers indentified from workforce engaged in the active mining operations shall be subjected to health check-up for occupational diseases and hearing impairment, if any, through an specialized agency/institution within the District/State and the results reported to this ministry and to DGMS.	20 % of the workforce is covered under Periodical Medical Examinations each year. Suspected cases of occupational health diseases like Pneumoconiosis and Noise Induced Hearing Loss are sent to higher medical board within company for comprehensive check-up. The PME data is being regularly sent to the DGMS.
xliii.	The embankment constructed along the river boundary shall be of suitable dimensions and critical patches shall be strengthened by stone pitching on the river front side and stabilized with plantation so as to withstand the peak water flow and prevent mine inundation	No embankment has been constructed along the river boundary.
xliv.	There shall be no overflow of OB into the river and into the agricultural fields and massive plantation of native species shall be taken up in the area between the river and the project.	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start. Moreover there exists no river near to Mithapur OCP.
xlv.	Catch drains and siltation ponds of appropriate size shall be constructed to arrest silt and sediment flow from soil, OB and mineral	Above mentioned mines of this cluster except Mithapur OCP is UG mines and in Mithapur OCP, the production is yet to start.

	<p>dumps. The water so collected shall be utilized for watering the mine area, roads, green belt development, etc. The drains shall be regularly desilted and maintained properly. Garland drains (size, gradient and length) and sump capacity shall be designed keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine site. Sump capacity shall also provide adequate retention period to allow proper settling of silt material</p>	
xlvi.	<p>Garland drains (size, gradient & length) around the safety areas such as mine shaft and low lying areas and sump capacity shall be resigned keeping 50% safety margin over and above the peak sudden rainfall and maximum discharge in the area adjoining the mine sites. Sump capacity shall also provide adequate retention period to allow proper settling of silt material.</p>	<p>Drains of adequate dimensions have been provided to evacuate maximum single day rainfall. Cleaning of drains is part of monsoon preparedness. Inspection of drains is carried out by safety personnel as part of pre-monsoon activity.</p>
xlvii.	<p>Dimensions of the retaining wall at the toe of the dumps and OB benches within the mine to check run-off and siltation shall be based on the rainfall data.</p>	<p>Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.</p>
lviii.	<p>Crushers at the CHP of adequate capacity for the expansion project shall be operated with high efficiency bag filters, water sprinkling system shall be provided to check fugitive emissions from crushing operations, conveyor system, haulage roads, transfer points, etc.</p>	<p>Not Applicable as there is no CHP</p>
xliv.	<p>Mine Discharge water outside the ML shall be monitored, particularly for TDS and treated to conform to prescribed levels before discharge into the natural environment.</p>	<p>Mine water discharge quality complies with prescribed standards. Regular monitoring is done by CMPDIL.</p>
i.	<p>Drills shall be wet operated</p>	<p>Mine working faces are properly wetted before drilling operation.</p>
ii.	<p>The project authorities shall undertake regular repairing and tarring of roads used for mineral transportation. A 3-tier green belt comprising of a mix of native species shall be developed all along the major approach roads.</p>	<p>Tarring of un-metalled roads is done and regular repairing works are carried out wherever required. A healthy natural plantation is already present around the siding to prevent dust and noise pollution and no further plantation is possible due to non availability of space at the siding. In addition to this siding is bounded by a thick brick wall of 10 feet height approx.</p>
iii.	<p>Controlled blasting shall be practiced with use of delay detonators and only during daytime. The mitigative measures for control of ground vibrations and to arrest the fly rocks and boulders shall be implemented.</p>	<p>Agreed. Controlled blasting is in practice with use of delay detonators.</p>
liii.	<p>A progressive afforestation plan shall be implemented covering an area of 972.84 ha at the end of mining, which includes Excavation area (441.25 Ha), OB dump area (53.11 ha), Mine Infrastructure/ Built-up area (100 ha); F\Green Belt (20 Ha), built up area (118.37 Ha)</p>	<p>Most of the area is naturally vegetated and these are not affected due to mining operations. However plantation with native species will be made on availability of land.</p>

	and subside area (240.11 ha) and in township located outside the lease by planting native species in consultation with the local DFO/ Agriculture Department. The density of the trees shall be around 2500 plants per ha. Massive plantation shall be carried out in open spaces in and around the mine and a 3-Teir plantation along the main approach roads to the mine.	
liv.	The proponent should prepare restoration and reclamation plan for the degraded area. The land be used in a productive and sustainable manner	All mines of ECL have approved MCP which is being duly implemented for reclamation and restoration of degraded land in a productive and sustainable manner.
lv.	Compensatory Ecological & Restoration of waste land, other degraded lands and OB dumps in lieu of breaking open the land be carried out.	Reclamation and restoration of waste land, other degraded land and OB dumps in lieu of breaking open the land for all mines of ECL is done on the basis of approved MCP.
lvi.	No groundwater shall be used for mining operations	No groundwater is being used for mining operations.
lvii.	There will be external dump within the cluster and 5.90 Mm ³ in external OB Dumps covering an area of 29.20 Ha of Land. The OB dump height is up to 5 m. The Maximum slope of the dump shall not exceed 28 degrees. Monitoring and management of reclaimed dump sites shall continue till the vegetation becomes self sustaining and compliance status shall be submitted to MOEFCC and its regional office on yearly basis.	Noted and agreed: Mithapur OCP is only OCP under this cluster from which production is yet to start.
lviii.	Of the total quarry area 29.20 Ha. The backfilled quarry area of 29.20 Ha shall be reclaimed with plantation by planting native plant species in consultation with the local DFO/Agriculture Department. The density of the trees shall be around 2500 plants per ha.	Noted and Agreed.
lix.	Regular monitoring of ground water level quality shall be carried out by establishing a network of existing wells and construction of new peizometer. The monitoring for quantity shall be done four times a year in pre-monsoon (May), monsoon (August), post-monsoon (November) and winter (January) seasons and for quality in May. Data thus collected shall be submitted to the Ministry of Environment, Forests & Climate Change and to the Central Pollution Control Board quarterly within one month of monitoring.	Regular monitoring of ground water quality and level is being done by CMPDIL, Asansol. The monitoring reports indicate that the quality of the water is meeting the drinking water quality standards. The measurement of water level is being carried out and the water level data shows that there no significant impact on ground water level.
lx.	The Company shall put up artificial groundwater recharge measures for augmentation of groundwater resource in case monitoring indicates a decline in water table. The project authorities shall meet water requirement of nearby village(s) in case the village wells go dry due to dewatering of mine	Complied. There are three existing rain water harvesting system under Satgram UG (GM office, Transit House, Officer's Colony) and two proposals for Rainwater Harvesting is in process under Sripur Area (i.e at Sripur Area Guest House and Community Building). More provisions for rain water harvesting systems will be taken up by the company at several

		places which face lowering of GWL during summer period.																								
lxi.	Sewage treatment plants shall be installed in the existing colony. A small workshop which caters to small repairing jobs of day to day nature like welding machining etc. discharges negligible amount of water, say about 10 litres/day for which ETP is not required.	Existing colonies are very old and have been provided with septic tank followed by soak pit. New Colonies will be provided with integrated STP. There are no workshops in Cluster No. 8																								
lxii.	Land outsees shall be compensated as per the norms laid out R&R policy of CIL or the national R&R policy or R&R Policy of the state government whichever is higher.	It is being complied as per R&R Policy of CIL.																								
lxiii.	For monitoring land use pattern and for post mining land use, a time series of land use maps, based on satellite imagery (on a scale of 1:5000) of the core zone and the buffer zone, from the start of the project until end of mine life shall be prepared once in 3 years (for any one particular season which is consistent in the time series), and the report submitted to MOEF& CC and its concerned Regional Office.	Land use pattern and plantation is being monitored by satellite surveillance based on satellite imagery. Changes in the land use pattern will be tracked by carrying out satellite imagery at every three years' interval. CMPDI, Ranchi is assigned with this task.																								
lxiv.	A Detailed Final Mine Closure Plan along with details of Corpus Fund shall be submitted to the Ministry of Environment, Forest & Climate Change within 6 months of grant of Environment Clearance.	The Mine Closure Plan as per guidelines of Ministry of Coal has been approved by ECL Board in the 264 th Board meeting held on 24 th Sept., 2013. The data on Corpus Fund has been submitted to the Ministry of Environment, Forest & Climate Change within 6 months of grant of Environmental Clearance																								
lxv.	The project authorities shall in consultation with the panchayats of the local villages and administration identify socio-economic and welfare measures under CSR to be carried on over the balance life of the mine	As per the revised CSR policy of Coal India Ltd. 2% of the average profit of preceding 3 years is the norms for CSR expenditure in the entire ECL command areas. SRIPUR AREA <table border="1"> <thead> <tr> <th>Sl. No.</th> <th>Year of Work</th> <th>Expenditure (in lakhs)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>2012-13</td> <td>Rs. 25.05</td> </tr> <tr> <td>2</td> <td>2013-14</td> <td>Rs. 0.00</td> </tr> <tr> <td>3</td> <td>2014-15</td> <td>Rs. 16.54</td> </tr> <tr> <td>4</td> <td>2015-16</td> <td>Rs. 0.00</td> </tr> <tr> <td>5</td> <td>2016-17</td> <td>Rs. 58.74</td> </tr> <tr> <td>6</td> <td>2017-18</td> <td>Rs. 2.19</td> </tr> <tr> <td>7</td> <td>2018-19</td> <td>Rs. 6.03</td> </tr> </tbody> </table> SATGRAM AREA: THE CSR activities for Satgram Area are attached as ANNEXURE -I	Sl. No.	Year of Work	Expenditure (in lakhs)	1	2012-13	Rs. 25.05	2	2013-14	Rs. 0.00	3	2014-15	Rs. 16.54	4	2015-16	Rs. 0.00	5	2016-17	Rs. 58.74	6	2017-18	Rs. 2.19	7	2018-19	Rs. 6.03
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7	2018-19	Rs. 6.03																								
lxvi.	Corporate Environmental Responsibility:																									
(a)	The Company shall have a well laid down Environmental Policy approved by the Board of Directors.	It is being complied with.																								
(b)	The Environmental Policy shall prescribe for standard operating process/procedures to bring into focus any infringements/deviation/violation of the	It is being complied with.																								

	environmental or forest norms/conditions.	
(c)	The hierarchical system or Administrative Order of the company to deal with environmental issues and for ensuring compliance with the environmental conditions shall be furnished.	It is being complied with.
(d)	To have proper checks and balances, the Company shall have a well laid down system of reporting of non-compliances/violations of environmental norms to the board of directors of the company and /or shareholders or stakeholders at large.	Noted.

General Conditions:

SI No.	Conditions	Compliance Status
i.	No. change in mining technology and scope of working shall be made without prior approval of the Ministry of Environment, Forest & Climate Change.	There has been no change in mining technology.
ii.	No change in the calendar plan of production for quantum of mineral coal shall be made.	It is being complied with.
iii.	Four ambient air quality monitoring stations shall be established in the core zone as well as in the buffer zone for PM ₁₀ ,PM _{2.5} ,SO ₂ and NO _x monitoring. Location of the stations shall be decided based on the meteorological data, topographical features and environmentally and ecologically sensitive targets in consultation with the State Pollution Control Board. Monitoring of heavy metals such as Hg, As, Ni, Cd, Cr, etc carried out at least once in six months.	It is being complied with.
iv.	Data on ambient air quality(PM ₁₀ ,PM _{2.5} ,SO ₂ and NO _x) and heavy metals such as Hg,As,Ni,Cd,Cr and other monitoring data shall be regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and Central Pollution Control Board once in six months. Random verification of samples through analysis from independent laboratories recognised under the EPA rules, 1986 shall be furnished as part of compliance report.	Ambient air quality (PM10, PM2.5, SO ₂ and NO _x) and heavy metals such as Hg, As, Ni, Cd, Cr and other monitoring data are regularly submitted to the Ministry including its concerned Regional Office and to the State Pollution Control Board and the Central Pollution Control Board once in six months.
v.	Adequate measures shall be taken for control of noise levels below 85 dBA in the work environment. Workers engaged in blasting and drilling operations, operation of HEMM, etc shall be provided with ear plugs/muffs	Regular Environmental monitoring is being carried out fortnightly basis by CMPDI, Asansol.
vi.	Industrial wastewater (workshop and wastewater from the mine) shall be properly collected, treated so as to conform to the standards prescribed under GSR 422 (E) dated 19 th May 1993 and 31 st December 1993 or as amended from time to time before discharge. Oil and grease trap shall be installed before discharge of workshop effluents.	Mine discharge water samples from the mines is collected and tested in laboratory at CMPDI, RI-I, Asansol on quarterly basis. Mine water quality conforms to the standards prescribed under GSR 422(E) dated 19th May 1993 and 31st December 1993.
vii.	Vehicular emissions shall be kept under control and	Coal is transported from mines to nearby

	regularly monitored. Vehicles used for transporting the mineral shall be covered with tarpaulins and optimally loaded.	Railway Siding in tipplers. This is ensured that coal in tipplers is wet and covered with tarpaulin before leaving the mine to prevent vehicular pollution. HEMMS and other vehicle are maintained properly in the workshops to check vehicular emissions.
viii.	Monitoring of environmental quality parameters shall be carried out through establishment of adequate number and type of pollution monitoring analysis equipment in consultation with the State Pollution Control Board and data got analysed through a laboratory recognised under EPA Rules, 1986.	Monitoring of environmental parameters is carried out on regular basis. Analysis of these parameters is carried out at CMPDIL laboratory having all necessary facilities.
ix.	Personnel working in dusty areas shall wear protective respiratory devices and they shall also be provided with adequate training information on safety and health aspects.	Training and awareness programmes are carried out for the personnel working in dusty areas. All personnel working in such areas are provided mask to protect themselves.
x.	Occupational health surveillance programme of the workers shall be undertaken periodically to observe any contractions due to exposure to dust and to take corrective measures, if needed and records maintained thereof. The quality of environment due to outsourcing and the health and safety issues of the outsourced manpower should be addressed by the company while outsourcing.	Periodical Medical Examination (PME) for all employees are carried out once in every 5 years (@ 20% employees/year). This PME is mandatory for all employees. Special cases diagnosed during such PMEs are monitored at shorter intervals as directed by the PME Board of Doctors. All serious diseases and impairments are reported to DGMS at regular intervals.
xi.	A separate environmental management cell with suitable qualified personnel shall be set up under the control of a Senior Executive, who will report directly to the Head of the company.	A separate Environment Management Cell with qualified personnel has been established at all the Areas of ECL. The cell report to D(T), P&P of the company through General Manager (Environment & Forests).
xii.	The funds embarked for environmental protection measures shall be kept in separate account and shall not be diverted for other purpose. Year-wise expenditure shall be reported to this Ministry and its concerned Regional Office.	Funds for environmental protection as kept in budget each year is not diverted for other purposes.
xiii.	The project authorities shall advertise at least in two local newspapers widely circulated around the project, one of which shall be in vernacular language of the locality concerned within seven days of the clearance letter informing that the project has been accorded environmental clearance and a copy of the clearance letter is available with the State Pollution Control Board and may also be seen at the website of the Ministry of Environment, Forests & Climate Change at http://envfor.nic.in	All the ECs are published in two local newspapers widely circulated around the project area.
xiv.	A copy of the environment clearance letter shall be marked to concern Panchayat/Zila Parishad, Municipal Corporation or Urban local body and local NGO, if any, from whom any suggestion/representation has been received while processing the proposal. A copy of the clearance letter shall also be displayed on	Complied

	company's website.	
xv.	A copy of the environment clearance letter shall also be displayed on the website of the concerned State Pollution Control Board. The EC letter shall also be displayed at the Regional Office, district Industry sector and Collector's Office/Tehsildar's office for 30 days	Complied
xvi.	The clearance letter shall be uploaded on the company's website. The compliance status of the stipulated environmental clearance conditions shall also be uploaded by the project authorities on their website and updated at least once every six months so as to bring the same in public domain. The monitoring data of environmental quality parameter (air, water, noise and soil) and critical pollutant such as PM ₁₀ , PM _{2.5} , SO ₂ and NO _x (ambient) and critical sectoral parameters shall also be displayed at the entrance of the project premises and mine office and in corporate office and on company's website.	All the EC letters along with monitoring data and compliance report is uploaded in the company's website which is regularly updated. The link is: www.easterncol.gov.in
xvii.	The project proponent shall submit six monthly compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) to the respective Regional Office of the Ministry, respective Zonal Offices of CPCB and SPCB.	The compliance reports on status of compliance of the stipulated environmental clearance conditions (both in hard copy and in e-mail) shall be submitted six monthly to the respective Regional Office of the Ministry, respective Zonal Offices of CPCB and the SPCB.
xviii.	The Regional Office of this Ministry located in the Region shall monitor compliance of the stipulated conditions. The Project authorities shall extend full cooperation to the office(s) of the Regional Office by furnishing the requisite data/information/monitoring reports.	It is being complied with.
xix.	The Environmental statement for each financial year ending 31 march in Form-V is mandated to be submitted by the project proponent for the concerned State Pollution Control Board as prescribed under the Environment (Protection) Rules, 1986, as amended subsequently, shall also be uploaded on the company's website along with the status of compliance of EC conditions and shall be sent to the respective Regional Offices of the MoEF&CC by e-mail.	It is being complied with.

Plantation Details

Location	Area in Ha and no of Saplings	Head	Creation	1 st year maintenance	2 nd year maintenance	3 rd year maintenance	4 th year maintenance	Total	Remarks
Kalidaspur Biodiversity Park	10 Ha, 17650 W/o No ECL/ENV/03/12/308 dt	Year	2012-13	2013-14	2014-15	2015-16	2016-17	3058945	Work has been completed and payment for 5 years has been
		Amount in Rs	1800000	539250	309695	205000	205000		
		Cheque Details	708353 dt 3.10.12	914872 dt 29.10.13	665906 dt 12.11.14	702250 dt 16.12.15	252408 dt 12.02.17		
Nimcha-Damalia OB Dump	5 Ha, 12500 W/o No ECL/ENV/15/220 dt 25/28.04.15	Year	2015-16	2016-17	2017-18	2018-19	2019-20	1076000	The payment of 1st, 2nd, 3rd maintenance is done/4th years will be done in Mar 19-20
		Amount in Rs	416500	261250	261250	137000	0		
		Cheque Details	702433 dt 15.1.16	252409 dt 15.02.2017	184922 dt 24.01.18	206829 dt 12/04/19	0		
Mallick Basti OCP	3.5 Ha, 8750 W/o No ECL/ENV/18/234 dt 20.06.18	Year	2018-19	2019-20	2020-21	2021-22	2022-23	315525	Creation payment done
		Amount in Rs	315525	0	0	0	0		
		Cheque Details	Cheque No 206829 dt 12/04/19	0	0	0	0		
Sitaldasji OCP	6.5 Ha, 16250 W/o No ECL/ENV/15/234 dt 20.06.18	Year	2018-19	2019-20	2020-21	2021-22	2022-23	585975	Creation payment done
		Amount in Rs	585975	0	0	0	0		
		Cheque Details	Cheque No 206829 dt 12/04/19	0	0	0	0		
Total (till march 2019)								5036445	

11. CSR

i. Details of CSR Projects																		
Sl no.	Project	Start Date	Tentative End Date	Project Cost (In Rs.)		Implementing Agency	Status(ongoing/completed)	Expenditure during Month-Sep 2018	Cumulative amount spent in the FY. 2018-19	Total Cumulative amount spent till date	Sector(Healthcare/education/environment etc)	Beneficiaries list						Remarks
				B.C/Rev. B.C amount	Work order value							SC	ST	OBC	Minority	Gen	Total	
1	Drinking water arrangement at Rangamati High School, Kalidaspur	Sep-18	Nov-18	10,73,000.00	9,94,960	Satgram Area(Civil)	Ongoing	Nil	NA	NA	Health & Education	257	67	NA	143	719	1186	WO issued to M/s Pabitra Pal
2	IHHL construction at Raniganj block	Oct-17	Dec-18	1,37,40,000.00	Phase wise as per MoU	Block Development Office , Raniganj	Ongoing	Nil	41,22,000.00	1,09,92,000.00	Health & Sanitation	745	273	275	105	81	1374	Third and last phase of construction is ongoing

ii. Details of Budget						
Sl no.	Activity	Financial Year	Budget Allocated	Expenditure Incurred/Utilized	Extent of funds utilization in comparison to 2% of average profit (as per act)	Balance

iii. Skill Development –Year 2018-19 MonthSept 2018								
Description	Target (No. of persons)	Achievement (No. of outsiders trained)					Budget Allocation for the year 2018-19	Expenditure
		Women	SC/ST	OBC	Others	Total		
Livelihood Generation for SHG's through school uniform Tailoring Unit at Jemeri GP, Satgram Area	201 nos. in 03 years						10,81,785.00	Payment made by ECL HQ for Rs. 5,40,893/- Machines are being delivered by the party

iv. CSR Health Camp conducted				
Sl no	Date	Place	Duration	Coverage

v. Proposals at ECL HQ				
Sl no	Name of the Project	Date	Place	Amount (in Rs.)

1	Drinking water arrangement for Amkola village from PHE pump house at Tirat mouza	26.06.2018	Amkola Village	68,88,524/-
2	Installation of 174 units of LED based Solar street lights in GP's of Raniganj block	17.05.2018	Raniganj block	44,76,150/-
3	Drinking water cooler at Mejia Girl's HS	18.09.2018	Mejia Block	3,75,000/-

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The information given in this report is not to be communicated either directly or indirectly to the press or to any person not holding an official position in the CIL / GOVERNMENT.

**ENVIRONMENTAL MONITORING REPORT
OF
CLUSTER NO. 8**

(FOR THE MONTH OF MARCH, 2019)

(SRIPUR & SATGRAM AREA)

Eastern Coalfields Limited



**Regional Institute-1
Asansol (WB)**

ENVIRONMENT MONITORING REPORT FOR CLUSTER NO. 8

(For the Month of March, 2019)

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CHAPTER - I
INTRODUCTION

1.0 The environmental monitoring has been carried out as per conditions laid down by MoEF&CC while granting environmental clearance to different projects. CMPDIL has trained manpower and well equipped laboratory to carry out monitoring, analysis and R&D work in the field of environment.

Reports have been prepared for submission to MoEF&CC & SPCB and other statutory authorities.



CHAPTER-II**AMBIENT AIR QUALITY MONITORING****2.1 Location of sampling station and their rationale:****2.1.1 Ambient Air Quality Sampling Locations****I. Industrial Area Monitoring Location****i) Near Bhanora Railway Siding (8A1): Industrial Area**

The sampler was placed at Bhanora west block railway siding. This station was selected to assess the ambient air quality in the core zone where Coal transporting are in progress.

ii) In Shivdanga village, Sripur GM Office (8A2) : Industrial Area

The sampler was placed at Sripur CGM Office of the north east side of Ningah UG mine and Shivdanga UG mine. The station was selected to represent the impact of mining activities of the North-East side.

II. Residential Area Monitoring Location**iii) Near Jamuria Railway Siding (8A3): Residential Area**

The sampler was placed in the premises of the Jamuria SI Office. This station was selected to assess the ambient air quality of Residential Area in the Buffer zone of Sripur. As well as nearby road transport also causes air pollutant.

iv) Kashinathpur village near Kuardih Railway siding (8A4): Residential Area

The sampler was placed near Rotibati Workshop. It is also near coal siding and just side of a busy road. This site was selected to assess the present ambient air quality status in residential area of core zone.

v) In Ranisayer village (8A5): Residential Area

The Air sampler was placed near Ranisayer Village which is in the buffer zone of Satgram Copex. This site was selected to assess the present ambient air quality status in residential area.

vi) In Ikra village (8A6): Residential Area.

The sampler was placed in Ikra High School of Ikra Village. This site was selected to assess the present ambient air quality status in residential area of buffer zone of Sripur Area.

2.2 Methodology of sampling and analysis

Parameters chosen for assessment of ambient air quality were Particulate Matter (PM₁₀), Fine Particulate Matter (PM_{2.5}), Sulphur Di-oxide (SO₂) and Nitrogen Oxides (NO_x). Respirable Dust Sampler (RDS) & Fine Dust Sampler (FDS) were used for sampling of PM₁₀ & gaseous pollutants and PM_{2.5} respectively. The samples were analysed in Environmental Laboratory of CMPDI, RI-I, Asansol.

2.3 Results & Interpretations

The results of Ambient Air Quality are presented in tabular form along with for each monitoring station. Sampling stations have been chosen keeping in view predominant wind direction and have been classified as Permanent, Pre monsoon (April – September) & Post monsoon (October – March) air sampling stations. The interpretations of different parameters are given below:

2.3.1 Ambient air quality

Particulate Matter (PM₁₀)

In Industrial area varies from 91.4 to 93.5 µg/m³ & in Residential area from 86.3 to 87.6 µg/m³.

Fine Particulate Matter (PM_{2.5})

In Industrial area from 51.2 to 57.2 µg/m³ & in Residential area from 40.8 to 45.1 µg/m³

Sulphur Dioxide (SO₂):

In Industrial area below 10 µg/m³ & in Residential area below 10 µg/m³.

Oxides of Nitrogen (NO_x):

In Industrial area varies from 22.7 to 25.7 µg/m³ & in Residential area from 18.5 to 20.9 µg/m³.

AMBIENT AIR QUALITY DATAName of the Company: **Eastern Coalfield Limited**Year : **2019**Name of the Project : **Mines of Cluster No. 8**Month : **March.****Industrial Area****1st fortnight**

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
8A1	Bhanora Railway Siding	02-Mar-19	93.2	51.2	<10.0	25.7
8A2	Sripur GM Office	02-Mar-19	91.4	53.6	<10.0	24.3

2nd fortnight

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
8A1	Bhanora Railway Siding	16-Mar-19	93.5	54.6	<10.0	23.8
8A2	Sripur GM Office	21-Mar-19	91.8	57.2	<10.0	22.7

Residential Area**1st fortnight**

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
8A3	Jamuria SI Office	05-Mar-19	87.2	41.1	<10.0	20.8
8A4	Rotibati Workshop near Kashinathpur Village	05-Mar-19	86.8	42.4	<10.0	19.5
8A5	Ranisayer village	02-Mar-19	87.4	40.8	<10.0	18.5
8A6	Ikra village	02-Mar-19	86.3	43.4	<10.0	20.6

2nd fortnight

Station Code	Station Name	Date of Sampling	Parameters			
			PM ₁₀ (µg/m ³)	PM _{2.5} (µg/m ³)	SO ₂ (µg/m ³)	NO _x (µg/m ³)
8A3	Jamuria SI Office	16-Mar-19	87.6	43.8	<10.0	20.9
8A4	Rotibati Workshop near Kashinathpur Village	16-Mar-19	87.2	45.1	<10.0	18.6
8A5	Ranisayer village	16-Mar-19	87.6	43.2	<10.0	20.3
8A6	Ikra village	21-Mar-19	86.7	41.6	<10.0	19.7

Environmental Standards for Ambient Air Quality (AAQ) :

Station Category	Environmental standard for Raniganj Coalfield vide MOEF, Govt. of India, Gazette Notification No. GSR 742 (E) dated 25.09.2000 for 24 hourly samples at 500 meters from dust generating point		National Ambient Air Quality Standards (NAAQS), 2009 for industrial, residential and rural areas for 24 hours samples	
	Pollutant Concentration ($\mu\text{g}/\text{m}^3$)			
	PM ₁₀	SO ₂	NO _x	PM _{2.5}
Industrial	300.0	120.0	120.0	60.0
Residential	100.00	80.0	80.0	

AMBIENT AIR METAL ANALYSIS REPORTName of the Company: **Eastern Coalfield Limited**Year : **2019**Name of the Project : **Mines of Cluster No. 8**Month : **March**

Station No.	Station Name	Date of Sampling	Arsenic (ng/m ³)	Cadmium (µg/m ³)	Chromium (µg/m ³)	Mercury (µg/m ³)	Nickel (ng/m ³)	Lead (µg/m ³)
Method of Detection			Atomic Absorption Spectrophotometric (AAS)					
Detection Limit			1.0	0.001	0.01	0.001	0.10	0.005
8A1	Bhanora Railway Siding	02-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
8A2	Sripur GM Office	02-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
8A3	Jamuraia SI Office	05-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
8A4	Rotibati Workshop near Kashinathpur Village	05-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
8A5	Ranisayer village	02-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
8A6	Ikra village	02-Mar-19	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005

Environmental standards:

National Ambient Air Quality Standards (NAAQS) for residential, industrial and rural areas for 24 hourly/yearly samples:

Heavy Metal	Arsenic (ng/m ³)	Cadmium (µg/m ³)	Chromium (µg/m ³)	Mercury (µg/m ³)	Nickel (ng/m ³)	Lead (µg/m ³)
Concentration	6	Not specified	Not specified	Not specified	20	0.5

CHAPTER – III

WATER QUALITY MONITORING**3.1 Location of sampling sites and their rationale****i) Girmint /K D I UG (8MW1)**

This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams

ii) Sripur Seam Incline UG (8MW2)

This location has been selected to monitor the discharge quality of Mine effluent to siltation pond and use in agriculture in nearby villages.

iii) Ningah UG (8MW3)

This location has been selected to monitor the discharge quality of Mine effluent supply to colony quarter for domestic uses and to natural surface streams

iv) Satgram UG (8MW4)

This location has been selected to monitor the discharge quality of Mine effluent to natural surface streams after sedimentation tank.

3.2 Methodology of sampling and analysis

Water samples were collected as per standard practice. The effluent samples were collected and analysed for five parameters on fortnightly basis and all parameters on Half-yearly basis. The Ground water samples were collected and analysed for all parameters on annually basis. Parameters like pH and Free Residual Chlorine were analysed on-site while collecting the samples. Thereafter the samples were preserved and analysed at the field laboratory located at RI-I Office campus.

3.3 Results & Interpretations

The results are given in tabular form along with the applicable standards. Results are compared with General Standards for Discharge of Effluent (Schedule VI) in case of effluent/mine water sample and compared with IS.10500: 2012 in case of drinking water sample. Results show that most of the parameters are within the permissible limits.

Cluster No. 8

CMPDIL

WATER QUALITY DATA (Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 8**

Month: **March.**

Name of the Stations & Code :
1. 8MW1- Girmint /K D I UG 2. 8MW2- Sripur Seam Incline UG
3. 8MW3- Ningah UG 4. 8MW4- Satgram UG

First Fortnight data

Sl. No.	Parameters	Sampling station & sampling date				General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
		8MW1	8MW2	8MW3	8MW4			
1	pH	All parameters result is given separately for the month of March'19				5.5 - 9.0	Electrometric	0.01
2	TSS					100 (Max)	Gravimetric Method	10.0
3	TDS					Not specified	Gravimetric Method	25.0
4	Oil & Grease					10 (Max)	Partition Gravimetric	2.0
5	COD					250 (Max)	Closed Reflux	4.0

Second Fortnight data

Sl. No.	Parameters	Sampling station & sampling date				General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
		8MW1	8MW2	8MW3	8MW4			
		18-Mar-19	18-Mar-19	18-Mar-19	18-Mar-19			
1	pH	8.58	8.34	7.26	8.14	5.5 - 9.0	Electrometric	0.01
2	TSS	32	24	26	22	100 (Max)	Gravimetric Method	10.0
3	TDS	638	366	592	700	Not specified	Gravimetric Method	25.0
4	Oil & Grease	<2.0	<2.0	<2.0	<2.0	10 (Max)	Partition Gravimetric	2.0
5	COD	12	28	20	16	250 (Max)	Closed Reflux	4.0

All values are expressed in mg/L unless specified.

Cluster No. 8

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 8**

Month: **March.**

Name of the Stations & Code : **1. 8MW1- Girmint /K D I UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	7-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	16	100	Gravimetric	10
4	pH	8.33	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	30.7	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.64	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.78	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	4	30	Bioassy	2.0
12	COD	20	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.04	0.1	Colorimetric	0.01
16	Total Chromium	0.06	2.0	AAS-Flame	0.04
17	Copper	0.04	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.36	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.68	5.0	Molybdovanadate	0.30
23	Sulphide	0.007	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.24	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.9	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	602	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 8

CMPDIL

WATER QUALITY DATA (Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 8**

Month: **March.**

Name of the Stations & Code : **2. 8MW2- Sripur Seam Incline UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	7-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	20	100	Gravimetric	10
4	pH	8.21	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.9	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.58	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.62	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	2	30	Bioassy	2.0
12	COD	32	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.30	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.70	5.0	Molybdovanadate	0.30
23	Sulphide	0.006	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.24	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.0	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	340	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 8

CMPDIL

WATER QUALITY DATA

(Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 8**

Month: **March.**

Name of the Stations & Code : **3. 8MW3- Ningah UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	7-Mar-19			
1	Colour	5	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	24	100	Gravimetric	10
4	pH	7.52	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.6	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.62	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.52	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	5	30	Bioassy	2.0
12	COD	28	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.07	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.03	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.36	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.88	5.0	Molybdovanadate	0.30
23	Sulphide	0.007	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.26	2.0	AAS-Flame	0.02
26	Iron	0.16	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	3.8	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	560	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.

Cluster No. 8

CMPDIL

WATER QUALITY DATA (Effluent Water)

Name of the Company: **Eastern Coalfield Limited**

Year : **2019.**

Name of the Project : **Mines of Cluster No. 8**

Month: **March.**

Name of the Stations & Code : **4. 8MW4- Satgram UG**

Sl. No.	Parameters	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	7-Mar-19			
1	Colour	3	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Physical	-
3	TSS	26	100	Gravimetric	10
4	pH	8.39	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	28.9	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	<2.0	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	<0.02	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.64	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.49	100	Macro Kjeldahl	1.0
10	Free Ammonia	<0.02	5.0	Spectrophotometric	0.02
11	BOD	8	30	Bioassy	2.0
12	COD	16	250	Closed Reflux	4.0
13	Arsenic	<0.002	0.2	AAS-VGA	0.002
14	Lead	<0.005	0.1	AAS-GTA	0.005
15	Hexavalent Chromium	0.03	0.1	Colorimetric	0.01
16	Total Chromium	0.08	2.0	AAS-Flame	0.04
17	Copper	0.03	3.0	AAS-Flame	0.03
18	Zinc	0.04	5.0	AAS-Flame	0.01
19	Selenium	<0.002	0.05	AAS-GTA	0.002
20	Nickel	<0.01	3.0	AAS-Flame	0.01
21	Fluoride	0.38	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.72	5.0	Molybdovanadate	0.30
23	Sulphide	0.007	2.0	Methylene Blue	0.005
24	Phenolics	<0.001	1.0	Chloroform Extraction	0.001
25	Manganese	0.28	2.0	AAS-Flame	0.02
26	Iron	0.14	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.0	10	Spectrophotometric	0.5
28	Cadmium	<0.0005	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	690	Not Specified	Gravimetric	25.0

All values are expressed in mg/L unless specified.