

**ENVIRONMENTAL STATEMENT
IN
FORM-V**

(Under Rule-14, Environmental (Protection) Rules, 1986)

(2018-2019)

**FOR
CLUSTER NO. – 7
(GROUP OF MINES)
Salanpur Area and Sripur Area
Eastern Coalfields Limited**

**Prepared at
Regional Institute – I
Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)
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CMPDI

ISO 9001:2015 Company

ENVIRONMENTAL STATEMENT FORM – V

Environmental statement for the financial year ending 31st March, 2019

Cluster No. – 7

FOR THE YEAR: 2018-19

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CHAPTER – I

INTRODUCTION

1.1 GENESIS:

The Gazette Notification vide G.S.R No. 329 (E) dated 13th March, 1992 and subsequently renamed to 'Environmental Statement' vide Ministry of Environment & Forests (MOEF), Govt. of India gazette notification No. G.S.R No. 386 (E) Dtd. 22nd April '93 reads as follows.

"Every person carrying on an industry, operation or process requiring consent under section 25 of the Water Act, 1974 or under section 21 of the Air Act, 1981 or both or authorisation under the Hazardous Waste Rules, 1989 issued under the Environmental Protection Act, 1986 shall submit an Environmental Audit Report for the year ending 31st March in Form V to the concerned State Pollution Control Board on or before the 30th day of September every year."

In compliance with the above and in fulfillment of condition laid out in the EC for the Cluster, the work of Environmental Statement for Cluster No. 7 was entrusted to CMPDI by GM (Environment & Forest), Eastern Coalfields Limited.

1.2 PROJECT DESCRIPTION:

Prior to 2014 – 15, a large number of taken over mines from pre – nationalization period, mostly underground mines, in the old coalfields of Raniganj and Jharia did not have environmental clearance from the MoEF&CC and were operating on the basis of "Consents" received from the respective PCBs. It was felt that if these mines could be brought under the ambit of EC, several measures for environmental protection and pollution control could be put in place. However, the work of obtaining EC for such mines, individually, would have taken a lot of time. To circumvent the problem, it was mooted that since the environmental problems being faced were of regional nature and not confined to individual mines alone, cluster/groups of such mines could be identified for preparing cluster-wise integrated EIA & EMPs, addressing such environmental concerns comprehensively and ensuring effective co-ordination of environmental control measures within each cluster. 13 such clusters were identified in the Raniganj Coalfield of ECL and EC has been obtained on the cluster approach for 12 such clusters.

Cluster No. 7 (Group of Mines) is one of the clusters for which EC has been granted vide letter no. J-11015/386/2010-IA-II.(M) dated 16th January, 2015 for a combined peak capacity of 0.74 MTY and within a ML area of 2313.0 Ha.

Cluster No. 7 is located in the west-central part of Raniganj Coalfields in Burdwan District of West Bengal and are having lease boundaries adjacent to each other. The mines are located on the eastern and western flanks of Salma Dyke in Barmondia geological block of Raniganj coalfield.

The area is well connected by roads and railways. Mines in Cluster No. 7 are located about 6 km north of Asansol town. Asansol is the nearest railway station. NH-2 Bypass runs along southern boundary of Cluster No. 7.

The mines of the cluster are spread over 2 Areas (Administrative Blocks) of ECL, namely, Salanpur Area and Sripur Area, ECL.

Location of Cluster No. 7 is shown in plate no. – 1.

The Cluster 7 consists of one mixed mine (UG & OC) and three UG mines. The composition of the cluster is tabulated as under:

SI No	Name of Mines	Production Capacity (MTY)	Lease Hold Area (Ha)	Life of the mine (Years)	Production during 2018-19 (MT)
1	Barmondia UG	0.030	665.0	>10	0.0
2	Chakballavpur UG	0.040	233.0	>10	0.0
3	Manoharbahal UG	0.040	735.0	>10	0.0
4	Bhanora West UG	0.13	680.0	>20	0.03
	Bhanora West OCP	0.50		3.5	0.50
	Total	0.74	2313.0		0.53

1. Barmondia UG

At present, there is no production from the mine.

2. Chakballavpur UG

At present, there is no production from the mine.

3. Manoharbahal UG

At present, there is no production from the mine.

4. Bhanora West UG & OC Patch

At present, in Bhanora West Colliery, Sripur (R-VI) seam is being worked. Gradient of the seam varies from 1 in 5.5 to 1 in 7. Coal seams are of Degree-II gassiness. In this mine, R-V seam has been developed in the past.

The OC patch has started production using shovel-dumper combination for coal extraction and OB removal.

1.3 ENVIRONMENTAL SCENARIO:

CMPDI has been engaged to carry out Routine Environmental Monitoring of all the 12 clusters. REM is being carried out since grant of EC for Cluster No. 7. The monitoring is carried out every fortnight by collecting 24 – hour samples for ambient air at 1 all - weather station, 3 pre-monsoon stations and 3 post-monsoon stations (based on local meteorology) and compared with the standards for quality. The details of the sampling stations are given below:

Cluster 7		
Station Code	Type of Station	Name of Station
7A1	Permanent Air Station	In Monoharbahal Village
7A2	Post monsoon Air Station	In Gobindpur Village
7A3	Post monsoon Air Station	In Bonbishnupur Village
7A4	Post monsoon Air Station	In Bhanora Village
7A5	Pre monsoon Air Station	In Janardansayer Village
7A6	Pre monsoon Air Station	In Raniganja Village
7A7	Pre monsoon Air Station	In Katanidangal Village

1 no. of sample of mine water is also collected and analysed every fortnight and compared with the MoEF Schedule – VI for discharge of effluents into land / streams. A complete analysis of the mine discharge sample which includes heavy metals and salts is carried out

twice every year. Day time work place Noise level is recorded at 2 locations. Groundwater level in the cluster area is monitored by taking measurements at 6 earmarked dugwells in the months of January, May, August and November every year. Samples of groundwater from these wells, which are also utilized by the local population for drinking and other domestic purposes, are analysed once in a year during May and compared with the IS 10500:2012 standards for drinking water quality.

Location of the monitoring stations of air, noise & water are shown in Plate- II.

The environmental monitoring results for 24 fortnights ending 31st March, 2019 are appended as Annexures – I, II, III & IV. The environmental monitoring results for the year 2018-19 are summarized below:

AMBIENT AIR QUALITY

The PM₁₀ concentration was found in the range of 76.8 to 90.5 µg/m³ and was within the limits as prescribed in the standards. The PM_{2.5} concentration was found in the range of 26.9 to 54.9 µg/m³ and is within the limits as per NAAQS, 2009. The SO₂ concentration remained below 10.0 µg/m³ and NO_x concentration was in the range of 10.8 to 24.5 µg/m³ and was well within the standards.

ENVIRONMENTAL STANDARDS

Environmental Standards for Ambient Air Quality (AAQ):

Station Category	<i>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</i>			<i>National Ambient Air Quality Standards (NAAQS), 2009 for industrial, residential and rural areas for 24 hours samples</i>
	Pollutant Concentration (µg/m³)			
	PM₁₀	SO₂	NO_x	PM_{2.5}
Industrial	300.0	120.0	120.0	60.0
Residential	100.00	80.0	80.0	

WATER QUALITY

Part-B of the Environmental Statement proforma contains the detailed break-up of water consumption.

The analysis results for the mine discharge water and groundwater reveal that most of the parameters are within permissible limits prescribed by MoEF&CC as General Standards Schedule – VI for Class-‘A’ effluent (Effluent discharged into inland surface water) and IS 10500:2012 for groundwater standards respectively.

In order to assess the impact of mining on the groundwater level, a network of 6 dugwells has been identified for monitoring of groundwater level in the months of January, May, August and November every year. Samples from these wells are collected and analysed during May every year and compared with IS 10500:2012 standards for drinking water.

Mine water and ground water analysis results are given in Annexure-III.

Well water level results are given in Annexure – IV.

NOISE LEVEL

The day time noise level was found in the range of 61.3 to 69.5 dB(A). The noise level recorded is below permissible limit prescribed by MoEF&CC.

Noise Level Standard as per Noise Pollution (Regulation and Control) Rules, 2000 for different station categories is given below:

Station Category	Limits for noise (Leq dB (A))	
	Day Time (6am-10pm)	Night Time (10pm-6am)
Industrial	75.0	70.0
Commercial	65.0	55.0
Residential	55.0	45.0

CHAPTER - II
ENVIRONMENTAL STATEMENT FORM– V

Environmental statement for the financial year ending March, 2019

PART – A

(I) NAME AND ADDRESS OF THE PROJECT

SL. NO.	HEADING	PARTICULARS
(I)	NAME AND ADDRESS OF THE PROJECT	Cluster No. – 7 (Group of Mines)
i	Barmondia UG	Barmondia Colliery, P.O. – Kanyapur, P.S. – Asansol North, Burdwan
ii	Chakballavpur UG	Chakballavpur Colliery, P.O. – Kanyapur, P.S. – Asansol North, Burdwan
iii	Manoharbahal UG	Manoharbahal Colliery, P.O. – Kanyapur, P.S. – Asansol North, Burdwan
iv	Bhanora West UG & OC	Bhanora West Block, Sripur Area, Burdwan, West Bengal
(II)	INDUSTRY CATEGORY	All mines in the cluster falls in red category
(III)	PRODUCTION CAPACITY	0.74 MTY
(IV)	YEAR OF ESTABLISHMENT	All the mines within the cluster are taken over mine from pre-nationalisation period.
(V)	DATE OF THE LAST ENVIRONMENTAL STATEMENT SUBMITTED	28.09.2018

PART – B

WATER AND RAW MATERIAL CONSUMPTION

(I) WATER CONSUMPTION (Cu. m/day)

1. Bhanora West UG & OC

Sl. No.	Particulars	2017-18	2018-19
A.	MINING (Dust suppression, Firefighting, Others)	85	15.0
B.	COOLING (in radiators of trucks/HEMM/workshop)	0	5.0
C.	DOMESTIC		
i	Colony (Mine water and PHED supply)	360	35.0
TOTAL		445.0	55.0

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2017-18	2018-19
Coal	0.49	0.04

(II) RAW MATERIAL CONSUMPTION :

1. Bhanora West UG

Name of raw material	Name of products	Consumption of raw material per unit of product	
		During previous financial year (2017-18)	During current financial year (2018-19)
1. Explosive	Coal	0.47 kg/te	0.37 kg/te
2. Diesel		0.27 l/te	1.08 l/te
3. Lubricants		0.19 l/te	1030 l*

*consumption for whole year is given

Bhanora West OC

Name of raw material	Name of products	Consumption of raw material per unit of product	
		During previous financial year (2017-18)	During current financial year (2018-19)
1. Explosive	Coal	7.90 kg/te	5.59 kg/te
2. Diesel		-	3.78 l/te
3. Lubricants		-	0.62 l/te

**PART – C
POLLUTION GENERATED**

Mine	Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants discharged (mass/volume)	Percentage variation from prescribed standards with reasons
Bhanora West UG & OC	WATER*	Average concentration of 25.60 mg/l. Mine water discharged is 2500.0 KL/day. Hence, total load is 64.0 kg/day.	1. Mine water discharge Analysis results are given in Annexure-III. 2. The main air pollutant is suspended PM ₁₀ and PM _{2.5} . The air quality results are appended as Annexure-I.	1. The analysis results reveal that most of the parameters are below permissible limits prescribed by MOEF as General Standards for class 'A' effluent (Effluent discharged into inland surface water). 2. Ambient air quality results show that the values of PM ₁₀ , PM _{2.5} , SO ₂ and NO _x are within the prescribed standards as per the standards.
	AIR*	Total pollutant load of PM ₁₀ is 814.90 kg/day while it is 171.13 kg/day for PM _{2.5} .		

* Water discharged from the mine contains pollutants in the form of suspended solids (mostly fine coal dust).

**PM₁₀ and PM_{2.5} estimation has been done using empirical formula by using Emission Factors derived from S&T studies done by CMPDI.

PART – D
HAZARDOUS WASTE
(As specified under Hazardous Waste
(Management and Handling) Rules, 1989)

1. Bhanora West UG & OC

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2017-18)	During current financial year (2018-19)	
A) From process			
i) Used oil	3540 litres	150 litres	Dealt in Part – F
ii) Lead-Acid Batteries			
a. Automobile batteries	2 Nos.	-	
b. Cap-lamp batteries	130 Nos.	-	
iii) Used Cotton waste	-	110 kg	
iv) Metal Scrap	12 T	-	

Approximate values may be given where actual values are not available.

Note: a) The detail of used oil is to be given to concerned Pollution Control Board in Form-13 as per time mentioned in HW (M & H), Amendment Rules, 2003.

b) The detail of disposal of Lead Acid batteries is to be given to concerned State Pollution Control Board in Form-VIII as per time mentioned in Batteries (M&H) Rules, 2001.

PART – E
SOLID WASTE

Particulars	Total quantity (In Million Cu.m)	
	During previous financial year (2017-18)	During current financial year (2018-19)
a) From process (Mining)	2.07	3.57
b) From pollution control facilities	-	-
c) Quantity recycled or reutilized back filled	-	0.90

PART – F

PLEASE SPECIFY THE CHARACTERISTICS (IN TERMS OF CONCENTRATION AND QUANTUM) OF HAZARDOUS AS WELL AS SOLID WASTE AND INDICATE THE DISPOSAL PRACTICE ADOPTED FOR BOTH THESE CATEGORIES OF WASTE.

Hazardous waste generated is given in the table PART-D which has been deposited at area store disposal stock yard.

Batteries are stored in Area Store from where replacement is taken.

Cap lamp batteries and HEMM batteries are stored at area store and auctioned to authorized recyclers. Cotton waste are re-used for other purposes, if required. Metal scraps are declared and report is sent to HQ. The scraps are then auctioned and sold through HQ.

Used oil are re-used as lubricants in coal tubs and friction roller.

PART – G

IMPACT OF POLLUTION CONTROL MEASURES ON CONSERVATION OF NATURAL RESOURCES AND CONSEQUENTLY ON COST OF PRODUCTION.

In order to carry out mining in an eco-friendly manner following pollution control measures have been implemented.

1.0 AIR POLLUTION CONTROL MEASURES:

- a) Trucks carrying coal to the railway sidings are covered with tarpaulin to avoid spillage.
- b) Regular sprinkling of water along road.
- c) Regular sprinkling of water at coal loading & discharge points with the help of stand post at Railway siding.

2.0 WATER POLLUTION CONTROL MEASURES:

(for Mine/CHP/Workshop/Colony discharge water)

- a. Regular monitoring of water quality parameters are done to assess the quality and necessary steps are taken accordingly.

3.0 NOISE POLLUTION CONTROL MEASURES:

- a) Regular maintenance of machines and other equipment at Bunker and workshop including mine fan.
- b) Providing green belt around core activity area, along road side in colony and in other vacant space.
- c) All HEMM & light vehicle are provided with silencers.
- d) Noise monitoring is being carried out regularly.

PART – H

ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION.

- a) Plantation will be carried out as per proposed plan in future.
- b) The Environmental monitoring of the project will be continued fortnightly as per the guidelines of Ministry of Environment and Forest (MOEF).
- c) Necessary Consent for discharge may be taken from Competent Authority, if required.
- d) Different activities have been carried out under CSR head like construction of laboratory room, construction of bituminous roads, etc.

PART – I

ANY OTHER PARTICULAR IN RESPECT OF ENVIRONMENTAL PROTECTION AND ABATMENT OF POLLUTION.

The Environmental Monitoring is carried out fortnightly for the project by CMPDI, RI-I as per the guideline of Ministry of Environment and Forest (MOEF) and based on the result thereof; colliery takes necessary action if needed.

Annexure – I

AMBIENT AIR QUALITY

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
7	7A1	In Monoharbahal Village	April	First	12-Apr-18	87.8	36.8	<10.0	15.9
7	7A1	In Monoharbahal Village	April	Second	16-Apr-18	87.6	36.2	<10.0	15.4
7	7A1	In Monoharbahal Village	May	First	04-May-18	88.5	36	<10.0	15.7
7	7A1	In Monoharbahal Village	May	Second	23-May-18	88.8	36.4	<10.0	15.4
7	7A1	In Monoharbahal Village	June	First	09-Jun-18	87.6	35.6	<10.0	15.2
7	7A1	In Monoharbahal Village	June	Second	27-Jun-18	87.2	35.2	<10.0	15
7	7A1	In Monoharbahal Village	July	First	14-Jul-18	84.4	33.6	<10.0	13.8
7	7A1	In Monoharbahal Village	July	Second	25-Jul-18	83.7	33.2	<10.0	13.6
7	7A1	In Monoharbahal Village	August	First	22-Aug-18	79.6	28.2	<10.0	11.6
7	7A1	In Monoharbahal Village	August	Second	22-Aug-18	79.6	28.2	<10.0	11.6
7	7A1	In Monoharbahal Village	September	First	10-Sep-18	77.9	27.4	<10.0	11.4
7	7A1	In Monoharbahal Village	September	Second	18-Sep-18	77.5	27.2	<10.0	11.2
7	7A1	In Monoharbahal Village	October	First	15-Oct-18	79.8	29.3	<10.0	13
7	7A1	In Monoharbahal Village	October	Second	26-Oct-18	81.5	29.5	<10.0	13.2
7	7A1	In Monoharbahal Village	November	First	15-Nov-18	82.6	29.9	<10.0	13.3
7	7A1	In Monoharbahal Village	November	Second	16-Nov-18	83.4	30.1	<10.0	13.5
7	7A1	In Monoharbahal Village	December	First	04-Dec-18	85.2	31.8	<10.0	14.5
7	7A1	In Monoharbahal Village	December	Second	21-Dec-18	85.5	33.4	<10.0	14.9
7	7A1	In Monoharbahal Village	January	First	03-Jan-19	85.8	38.6	<10.0	17.6
7	7A1	In Monoharbahal Village	January	Second	28-Jan-19	86.1	38.7	<10.0	18.6
7	7A1	In Monoharbahal Village	February	First	15-Feb-19	86.2	41.7	<10.0	20.7
7	7A1	In Monoharbahal Village	February	Second	20-Feb-19	86.5	36.7	<10.0	17.6
7	7A1	In Monoharbahal Village	March	First	01-Mar-19	87.5	52.5	<10.0	24.5
7	7A1	In Monoharbahal Village	March	Second	20-Mar-19	87.8	54.9	<10.0	23.7
7	7A2	In Gobindpur village	October	First	06-Oct-18	84.3	30.6	<10.0	13.4
7	7A2	In Gobindpur village	October	Second	26-Oct-18	85	30.8	<10.0	13.5
7	7A2	In Gobindpur village	November	First	15-Nov-18	86.2	30.6	<10.0	13.6
7	7A2	In Gobindpur village	November	Second	16-Nov-18	86.5	30.8	<10.0	13.8
7	7A2	In Gobindpur village	December	First	04-Dec-18	87.3	31.9	<10.0	16.3
7	7A2	In Gobindpur village	December	Second	21-Dec-18	87.6	33.1	<10.0	16.6
7	7A2	In Gobindpur village	January	First	04-Jan-19	87.5	39.8	<10.0	18.3
7	7A2	In Gobindpur village	January	Second	28-Jan-19	87.7	36.2	<10.0	16.5
7	7A2	In Gobindpur village	February	First	15-Feb-19	87.9	42.3	<10.0	19.6
7	7A2	In Gobindpur village	February	Second	20-Feb-19	88.1	39.4	<10.0	19.8
7	7A2	In Gobindpur village	March	First	13-Mar-19	89.2	41.1	<10.0	19.8
7	7A2	In Gobindpur village	March	Second	21-Mar-19	89.5	42.8	<10.0	18.6
7	7A3	In Bonbishnupur village	October	First	06-Oct-18	83.6	29.8	<10.0	12.8
7	7A3	In Bonbishnupur village	October	Second	27-Oct-18	83.9	30.2	<10.0	13
7	7A3	In Bonbishnupur village	November	First	15-Nov-18	84.6	30.4	<10.0	13.3
7	7A3	In Bonbishnupur village	November	Second	23-Nov-18	85.1	30.6	<10.0	13.5
7	7A3	In Bonbishnupur village	December	First	04-Dec-18	86.4	32.1	<10.0	16.4
7	7A3	In Bonbishnupur village	December	Second	21-Dec-18	86.7	32.8	<10.0	16.9
7	7A3	In Bonbishnupur village	January	First	04-Jan-19	86.6	37.4	<10.0	17.5
7	7A3	In Bonbishnupur village	January	Second	28-Jan-19	86.8	37.9	<10.0	17.8
7	7A3	In Bonbishnupur village	February	First	15-Feb-19	87	39.7	<10.0	17.4
7	7A3	In Bonbishnupur village	February	Second	20-Feb-19	87.9	38.4	<10.0	18.3
7	7A3	In Bonbishnupur village	March	First	11-Mar-19	88.4	40.3	<10.0	20.4
7	7A3	In Bonbishnupur village	March	Second	20-Mar-19	88.6	43.7	<10.0	20.4
7	7A4	In Bhanora village	October	First	03-Oct-18	85.8	30.2	<10.0	13

Environmental Statement (Form-V) for Cluster No. – 7 (Group of Mines) 2018-19

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
7	7A4	In Bhanora village	October	Second	27-Oct-18	86.1	30.4	<10.0	13.2
7	7A4	In Bhanora village	November	First	15-Nov-18	86.8	30.6	<10.0	13.5
7	7A4	In Bhanora village	November	Second	23-Nov-18	87.2	30.8	<10.0	13.6
7	7A4	In Bhanora village	December	First	04-Dec-18	87.8	33.2	<10.0	17.2
7	7A4	In Bhanora village	December	Second	21-Dec-18	88.2	33.9	<10.0	17.1
7	7A4	In Bhanora village	January	First	04-Jan-19	88.4	41.3	<10.0	19.4
7	7A4	In Bhanora village	January	Second	28-Jan-19	88.6	39.4	<10.0	15.4
7	7A4	In Bhanora village	February	First	15-Feb-19	88.7	38.2	<10.0	18.5
7	7A4	In Bhanora village	February	Second	20-Feb-19	88.9	39.4	<10.0	19.4
7	7A4	In Bhanora village	March	First	13-Mar-19	89.3	50.9	<10.0	23.8
7	7A4	In Bhanora village	March	Second	20-Mar-19	89.5	52.6	<10.0	22.8
7	7A5	In Janardansayer Village	April	First	10-Apr-18	85.2	34.6	<10.0	14.4
7	7A5	In Janardansayer Village	April	Second	16-Apr-18	85.3	34.8	<10.0	14.8
7	7A5	In Janardansayer Village	May	First	04-May-18	86.7	35	<10.0	15.2
7	7A5	In Janardansayer Village	May	Second	31-May-18	86.9	35.7	<10.0	14.8
7	7A5	In Janardansayer Village	June	First	09-Jun-18	86.4	35	<10.0	15
7	7A5	In Janardansayer Village	June	Second	23-Jun-18	86.1	34.8	<10.0	14.8
7	7A5	In Janardansayer Village	July	First	14-Jul-18	83.1	32.8	<10.0	13.6
7	7A5	In Janardansayer Village	July	Second	21-Jul-18	82.6	32.5	<10.0	13.4
7	7A5	In Janardansayer Village	August	First	23-Aug-18	79	27.8	<10.0	11.5
7	7A5	In Janardansayer Village	August	Second	23-Aug-18	79	27.8	<10.0	11.5
7	7A5	In Janardansayer Village	September	First	15-Sep-18	77.5	27.2	<10.0	11.2
7	7A5	In Janardansayer Village	September	Second	22-Sep-18	77	27	<10.0	11.1
7	7A6	In Raniganja Village	April	First	10-Apr-18	86.3	34.8	<10.0	14.8
7	7A6	In Raniganja Village	April	Second	23-Apr-18	86.4	34.2	<10.0	14.4
7	7A6	In Raniganja Village	May	First	15-May-18	87.4	34.6	<10.0	14.9
7	7A6	In Raniganja Village	May	Second	19-May-18	87.6	34.8	<10.0	14.4
7	7A6	In Raniganja Village	June	First	14-Jun-18	86.2	34.4	<10.0	14.5
7	7A6	In Raniganja Village	June	Second	23-Jun-18	86	34.5	<10.0	14.4
7	7A6	In Raniganja Village	July	First	14-Jul-18	83	32.6	<10.0	13.4
7	7A6	In Raniganja Village	July	Second	21-Jul-18	82.4	32.2	<10.0	13
7	7A6	In Raniganja Village	August	First	23-Aug-18	78.6	27	<10.0	11.2
7	7A6	In Raniganja Village	August	Second	23-Aug-18	78.6	27	<10.0	11.2
7	7A6	In Raniganja Village	September	First	12-Sep-18	77.2	27	<10.0	11
7	7A6	In Raniganja Village	September	Second	29-Sep-18	76.8	26.9	<10.0	10.8
7	7A7	In Katanidangal Village	April	First	06-Apr-18	89.4	36.2	<10.0	15.7
7	7A7	In Katanidangal Village	April	Second	27-Apr-18	89.6	36.4	<10.0	15.6
7	7A7	In Katanidangal Village	May	First	03-May-18	90.3	36.8	<10.0	15.8
7	7A7	In Katanidangal Village	May	Second	18-May-18	90.5	36.6	<10.0	15.6
7	7A7	In Katanidangal Village	June	First	09-Jun-18	89.3	36	<10.0	15.1
7	7A7	In Katanidangal Village	June	Second	23-Jun-18	89.1	35.8	<10.0	15.2
7	7A7	In Katanidangal Village	July	First	14-Jul-18	85.2	33.7	<10.0	14.2
7	7A7	In Katanidangal Village	July	Second	21-Jul-18	84.6	33.4	<10.0	14
7	7A7	In Katanidangal Village	August	First	23-Aug-18	83	30.2	<10.0	12.7
7	7A7	In Katanidangal Village	August	Second	23-Aug-18	83	30.2	<10.0	12.7
7	7A7	In Katanidangal Village	September	First	12-Sep-18	81.5	27.9	<10.0	11.2
7	7A7	In Katanidangal Village	September	Second	18-Sep-18	80.6	27.2	<10.0	11.3

AMBIENT AIR QUALITY METAL ANALYSIS

Station No	Station Name	Month	Fortnight	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)
7A1	In Monoharbahal Village	Sept	First	10-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A1	In Monoharbahal Village	Sept	Second	18-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A1	In Monoharbahal Village	March	First	01-Mar-19	<0.005	<0.001	<0.01	<0.001	<0.10	<0.005
7A2	In Gobindpur village	March	First	13-Mar-19	<0.005	<0.001	<0.01	<0.001	<0.10	<0.005
7A3	In Bonbishnupur village	March	First	11-Mar-19	<0.005	<0.001	<0.01	<0.001	<0.10	<0.005
7A4	In Bhanora village	March	First	13-Mar-19	<0.005	<0.001	<0.01	<0.001	<0.10	<0.005
7A5	In Janardansayer Village	Sept	First	15-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A5	In Janardansayer Village	Sept	Second	22-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A6	In Raniganja Village	Sept	First	12-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A6	In Raniganja Village	Sept	Second	29-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A7	In Katanidangal Village	Sept	First	12-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
7A7	In Katanidangal Village	Sept	Second	18-Sep-18	<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 (As) (ng/m ³)	Cadmium (Cd) (µg/m ³)	Chromium (Cr) (µg/m ³)	Mercury (Hg) (µg/m ³)	Nickel (Ni) (ng/m ³)	Lead (Pb) (µg/m ³)
Concentration	6	Not specified	Not specified	Not specified	20	0.5

Annexure – II**NOISE LEVEL**

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	Noise Level dB(A)
7	7N1	Pit-top Chakballavpur UG	April	First	10-Apr-18	67.2
7	7N1	Pit-top Chakballavpur UG	April	Second	16-Apr-18	61.3
7	7N1	Pit-top Chakballavpur UG	August	First	02-Aug-18	68.2
7	7N1	Pit-top Chakballavpur UG	November	First	15-Nov-18	63.5
7	7N1	Bhanora West OCP	February	First	15-Feb-19	64.7
7	7N2	Pit-top Bhanora West UG	April	First	10-Apr-18	66.7
7	7N2	Pit-top Bhanora West UG	April	Second	16-Apr-18	65.4
7	7N2	Pit-top Bhanora West UG	August	First	02-Aug-18	67.8
7	7N2	Pit-top Bhanora West UG	November	First	15-Nov-18	69.5
7	7N2	Bhanora West UG	February	First	15-Feb-19	68.3

Annexure – III

EFFLUENT WATER QUALITY (5 PARAMETERS)

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	pH	TSS	TDS	O&G	COD
7	7MW2	Bhanora West UG	April	First	10-Apr-18	7.47	24	798	<2.0	32
7	7MW2	Bhanora West UG	April	Second	16-Apr-18	7.60	28	760	<2.0	28
7	7MW2	Bhanora West UG	MAY	First	05-May-18	7.48	16	748	<2.0	24
7	7MW2	Bhanora West UG	MAY	Second	28-May-18	7.52	18	778	<2.0	32
7	7MW2	Bhanora West UG	June	First	09-Jun-18	7.46	22	738	<2.0	28
7	7MW2	Bhanora West UG	June	Second	23-Jun-18	7.34	20	700	<2.0	24
7	7MW2	Bhanora West UG	July	First	14-Jul-18	7.93	20	724	<2.0	32
7	7MW2	Bhanora West UG	July	Second	21-Jul-18	7.89	20	684	<2.0	44
7	7MW2	Bhanora West UG	August	First	07-Aug-18	7.76	30	754	<2.0	36
7	7MW2	Bhanora West UG	August	Second	25-Aug-18	7.62	38	716	<2.0	44
7	7MW2	Bhanora West UG	September	Second	18-Sep-18	7.58	20	712	<2.0	36
7	7MW2	Bhanora West UG	October	First	03-Oct-18	7.74	24	692	<2.0	28
7	7MW2	Bhanora West UG	October	Second	26-Oct-18	7.73	26	668	<2.0	40
7	7MW2	Bhanora West UG	November	First	05-Nov-18	7.84	28	628	<2.0	36
7	7MW2	Bhanora West UG	November	Second	16-Nov-18	7.58	18	586	<2.0	44
7	7MW2	Bhanora West UG	December	First	04-Dec-18	8.23	18	612	<2.0	36
7	7MW2	Bhanora West UG	December	Second	20-Dec-18	8.83	20	652	<2.0	32
7	7MW2	Bhanora West UG	January	First	04-Jan-19	8.44	40	674	<2.0	48
7	7MW2	Bhanora West UG	January	Second	26-Jan-19	8.40	36	650	<2.0	40
7	7MW2	Bhanora West UG	February	First	07-Feb-19	8.63	32	626	<2.0	48
7	7MW2	Bhanora West UG	February	Second	20-Feb-19	4.48	34	660	<2.0	52
7	7MW2	Bhanora West UG	March	Second	25-Mar-19	8.24	32	680	<2.0	36

Note: All parameters in mg/l unless otherwise specified

Effluent Water Quality Standards (MoEF Schedule – VI Standards)

Parameters	pH	TSS	TDS	Oil & Grease	COD
Limit	5.5-9.0	100	Not Specified	10	250

Annexure – III

EFFLUENT QUALITY STANDARDS (29 PARAMETERS)

Cluster	7	7	GENERAL STANDARDS FOR DISCHARGE OF ENVIRONMENTAL POLLUTANTS PART-A: EFFLUENTS (INLAND SURFACE WATER)
Station No	7MW2	7MW2	
Station Name	Bhanora West UG	Bhanora West UG	
Month	September	March	
Fortnight	First	First	
Date of Sampling	13-Sep-18	08-Mar-19	
Colour	3	5	Unobjectionable
Odour	Unobjectionable	Unobjectionable	Unobjectionable
TSS	18	18	100.0
pH	7.76	8.25	5.5-9.0
Temperature(Deg C)	28.5	29.6	Shall not exceed 5°C above the receiving water temp
Oil & Grease	<2.0	<2.0	10.0
Total Residual Chlorine	<0.02	<0.02	1.0
Ammonical Nitrogen	0.82	0.68	50.0
Total Kjeldahi Nitrogen	1.72	1.72	100.0
Free Amonia	<0.4	<0.02	5.0
BOD	16	10	30.0
COD	44	48	250.0
Arsenic	<0.005	<0.002	0.2
Lead	<0.005	<0.005	0.1
Hexavalent Chromium	0.04	0.04	0.1
Total Chromium	0.07	0.08	2.0
Copper	0.04	0.04	3.0
Zinc	0.03	0.04	5.0
Selenium	<0.005	<0.002	0.05
Nickel	<0.10	<0.01	3.0
Fluoride	0.52	0.36	2.0
Dissolved Phosphate	1.91	1.74	5.0
Sulphide	0.008	0.007	2.0
Phenolics	<0.001	<0.001	1.0
Manganese	0.24	0.22	2.0
Iron	0.16	0.14	3.0
Nitrate Nitrogen	3.2	3.9	10.0
Cadmium	<0.001	<0.005	2.0
Total Dissolved Solids	678	642	Not Specified

Annexure – III

GROUNDWATER QUALITY

Cluster No	7	7	7	7	7	7	Indian Drinking Water Standard (IS-10500:2012)	
Station No	7GW2	7GW3	7GW6	7GW1	7GW4	7GW5		
Station Name	Dugwell at Raniganj Chati village near kalimandir	Dugwell at westside of Kelajora health Centre	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	Dugwell at Janardan Sayer village near lalganj Hatia	Dugwell at Bhanora village main road side Mahadeb Smritinila	Dugwell at Bonbishtupur Majipara near transformer		
Month	May'18	May'18	May'18	May'18	May'18	May'18		
Fortnight	Second	Second	Second	Second	Second	Second	Acceptable Limit	Permissible Limit
Date of sampling	09-May-18	09-May-18	31-May-18	31-May-18	31-May-18	31-May-18		
Colour,Hazen unit Max	2	1	5	2	5	3	5.0	15.0
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity,NTU Max	1	1	2	2	2	1	1.0	5.0
pH	8.42	8.33	7.45	8.32	7.63	7.81	6.5-8.5	No relaxation
Total Hardness	98	72	374	478	524	144	200.0	600.0
Iron	<0.06	<0.06	<0.06	<0.06	<0.06	<0.06	0.30	No relaxation
Chlorides	16	08	104	153	216	21	250.0	1000.0
Res Free chlorine	0.03	0.04	0.04	0.04	0.06	0.04	0.20	1.0
Dissolved Solids	156	134	870	870	1220	320	500.0	2000.0
Calcium	44	32	160	196	216	72	75.0	200.0
Copper	<0.03	<0.03	<0.03	<0.03	<0.03	<0.03	0.05	1.5
Manganese	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.1	0.3
Sulphate	24	12	114	86	111	41	200.0	400.0
Nitrate	1.72	1.72	17.72	7.90	9.74	5.31	45.0	No relaxation
Fluoride	0.97	0.83	0.38	0.96	0.68	0.09	1.0	1.5
Selenium	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Arsenic	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	0.05
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc	0.03	0.02	0.02	0.03	0.03	0.03	5.0	15.0
Hex Chromium	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	No relaxation
Boron	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	0.5	1.0
Coliforms (MPN)	Nil	Nil	Nil	Nil	Nil	Nil	Shall not be detectable in any 100 ml sample	
Phenolics	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.001	0.001
Alkalinity	132	144	128	308	208	236	200.0	200.0
Cadmium (Cd)	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.003

Annexure – IV**GROUNDWATER LEVEL**

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	Ground Water Level BGL (mtr)
7	7GW1	Dugwell at Janardan Sayer village near Ialganj Hatia	May	First	31-May-18	4.3
7	7GW1	Dugwell at Janardan Sayer village near Ialganj Hatia	August	First	10-Aug-18	1.9
7	7GW1	Dugwell at Janardan Sayer village near Ialganj Hatia	November	First	16-Nov-18	2.8
7	7GW1	Dugwell at Janardan Sayer village near Ialganj Hatia	January	First	11-Jan-19	2.90
7	7GW2	Dugwell at Raniganj Chati village near Kalimandir	May	First	09-May-18	1.1
7	7GW2	Dugwell at Raniganj Chati village near Kalimandir	August	First	21-Aug-18	1.6
7	7GW2	Dugwell at Raniganj Chati village near Kalimandir	November	First	16-Nov-18	1.8
7	7GW2	Dugwell at Raniganj Chati village near Kalimandir	January	First	11-Jan-19	1.15
7	7GW3	Dugwell at westside of Kelajora health Centre	May	First	09-May-18	5.1
7	7GW3	Dugwell at westside of Kelajora health Centre	August	First	21-Aug-18	1.05
7	7GW3	Dugwell at westside of Kelajora health Centre	November	First	09-Nov-18	1.35
7	7GW3	Dugwell at westside of Kelajora health Centre	January	First	11-Jan-19	1.25
7	7GW4	Dugwell at Bhanora village main road side Mahadeb Smritinilay	May	First	31-May-18	6.45
7	7GW4	Dugwell at Bhanora village main road side Mahadeb Smritinilay	August	First	08-Aug-18	1.7
7	7GW4	Dugwell at Bhanora village main road side Mahadeb Smritinilay	November	First	09-Nov-18	2.3
7	7GW4	Dugwell at Bhanora village main road side Mahadeb Smritinilay	January	First	11-Jan-19	4.30
7	7GW5	Dugwell at Bonbishtupur Majipara near transformer	May	First	31-May-18	3.8
7	7GW5	Dugwell at Bonbishtupur Majipara near transformer	August	First	08-Aug-18	0.6
7	7GW5	Dugwell at Bonbishtupur Majipara near transformer	November	First	09-Nov-18	1.8
7	7GW5	Dugwell at Bonbishtupur Majipara near transformer	January	First	11-Jan-19	2.80
7	7GW6	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	May	First	31-May-18	5.15
7	7GW6	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	August	First	21-Aug-18	1.45
7	7GW6	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	November	First	09-Nov-18	1.6
7	7GW6	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	January	First	11-Jan-19	6.35

Plate - 1

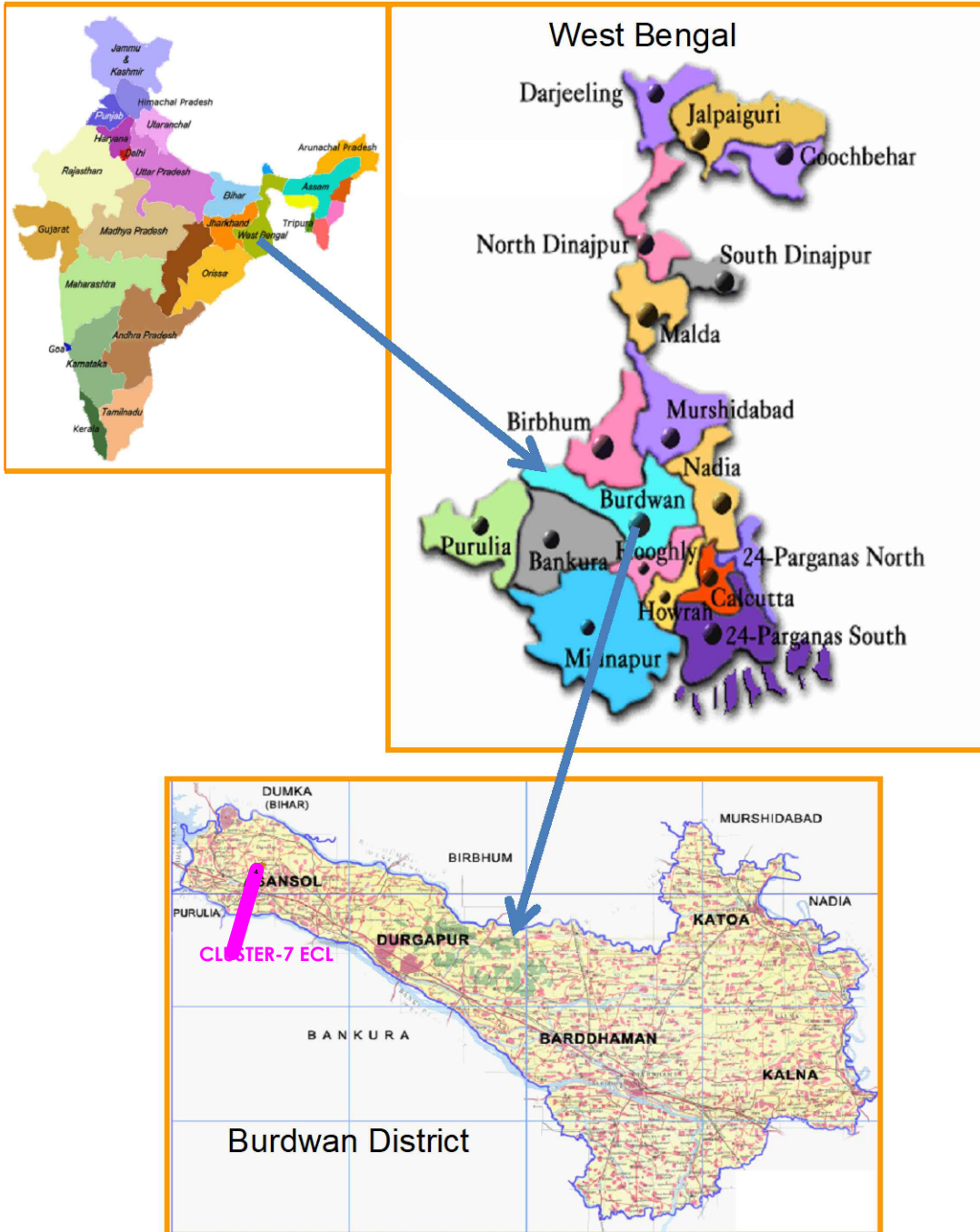


PLATE NO. 1

CUSTOMER: EASTERN COALFIELDS LIMITED JOB NO 111653
 ENVIRONMENTAL STATEMENT FOR CLUSTER-7

SUBJECT:
 LOCATION PLAN

CMPDI
 ISO 9001 Company

Sl. No.	Name	Designation	Signature	Date
1				
2				
3				
4				
5				

AIR QUALITY MONITORING STATIONS

Station Code	Type of Station	Name of Station
● 7A1	Permanent Air Station	In Monoharbahal Village
● 7A2	Post monsoon Air Station	In Gobindpur Village
● 7A3	Post monsoon Air Station	In Bonbishnupur Village
● 7A4	Post monsoon Air Station	In Bhanora Village
● 7A5	Pre monsoon Air Station	In Janardansayar Village
● 7A6	Pre monsoon Air Station	In Raniganja Village
● 7A7	Pre monsoon Air Station	In Katanidangal Village

NOISE SAMPLING STATIONS

Station Code	Name of Station (Workplace)
● 7N1	Chakballavpur UG
● 7N2	Bahanora West UG

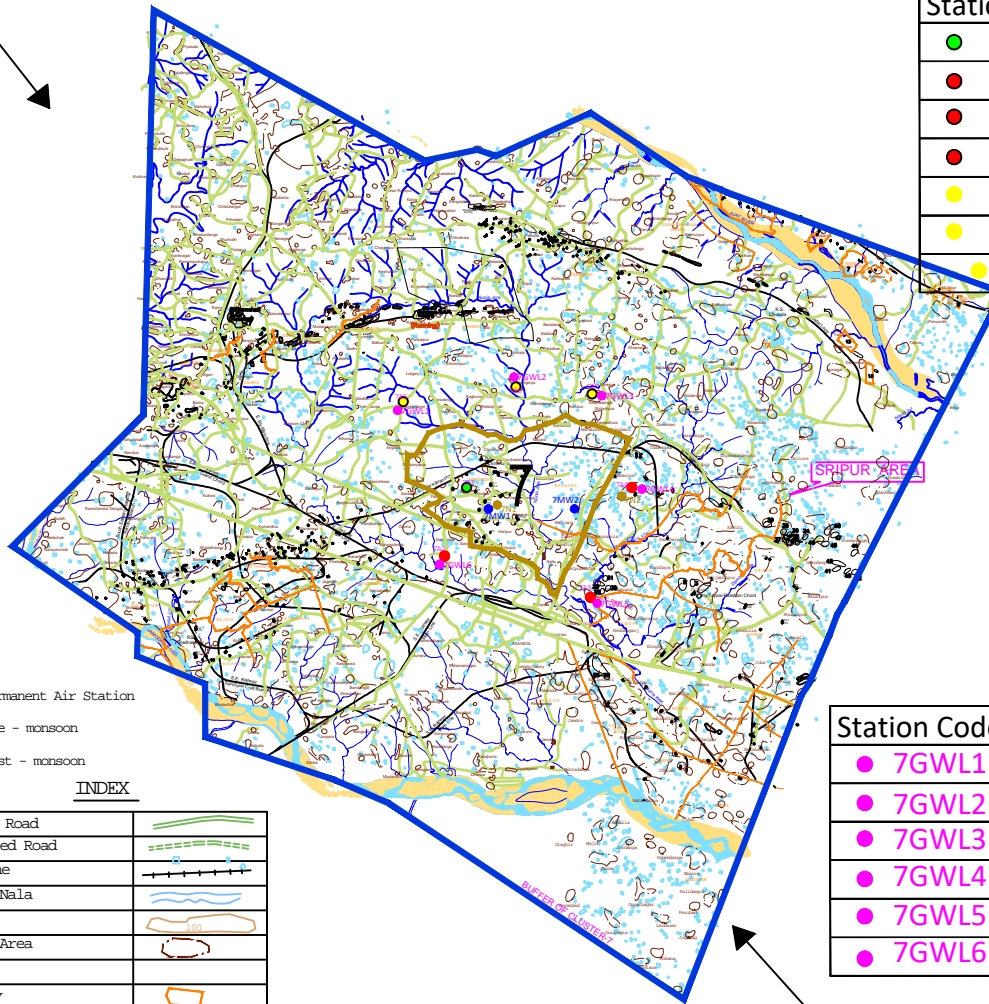
MINE/ EFFLUENT WATER STATIONS

Station Code	Mine/Effluent Water Station
● 7MW1	Chakballavpur UG
● 7MW2	Bhanora West UG

GROUND WATER LEVEL

Station Code	Location of Dug Well
● 7GWL1	Dugwell at Janardansayar village near Lalganj Hatia
● 7GWL2	Dugwell at at Ranigaj Chati village near Kalimandir
● 7GWL3	Dugwell at west side of Kelejora health centre
● 7GWL4	Dugwell at Bhanora village main roadside Mahadev Smritinilay
● 7GWL5	Dugwell at Bonbishtupur majhi para near transformer
● 7GWL6	Dugwell at Gobindpur village, backside of Biswanath weigh bridge

Predominant Wind Direction during October - March (Post - Monsoon)



- Permanent Air Station
- Pre - monsoon
- Post - monsoon

INDEX

Metalled Road	
Unmetalled Road	
Rail Line	
River & Nala	
Contour	
Builtup Area	
Area	
Colliery	
Quarry	
Tank	

NOTE:-

- Roads, Railway lines, Rivers & Nallas are taken from Survey of India's topo sheet.
- Area boundary of ECL, District boundary are taken from the plan supplied by ECL.
- Mines whose names appear in Red are presently closed due to exhaustion of workings.

Predominant Wind Direction during April - September (Pre - Monsoon & Monsoon Period)

PLATE NO. - 2

Customer	EASTERN COALFIELDS LTD.			
Job Title	ENVIRONMENTAL STATEMENT OF CLUSTER-7	Job No.	111653	
Subject	LOCATION OF MONITORING STATIONS	Activity	Name	Designation
		Checked		Signature
		Approved		Date
		Scale		Sheet
		Dwg. No.	RT/ENV/	REV. No.

CMPDI
ISO 9001 Company