

**ENVIRONMENTAL STATEMENT
IN
FORM-V**

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

(2021-2022)

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

Prepared at
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CMPDI

ISO 9001:2015 Company

ENVIRONMENTAL STATEMENT FORM – V

Environmental statement for the financial year ending 31st March, 2022

Cluster No. – 7

FOR THE YEAR: 2021-2022

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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.

In view of 1 BT programme of CIL, a Revised Mining Plan of Cluster No. 7 was prepared and approved by ECL Board. Based on the approved Revised Mining Plan, EC Amendment was obtained vide even letter no. dated 16.09.2021.

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:

Sl. No.	Name of Mines	Production Capacity (MTY)	Lease Hold Area (Ha)	Life of the mine (Years)	Production during 2021-22 (MT)
1	Barmondia UG	0.0	665.0	-	0.0
2	Chakballavpur UG	0.0	233.0	-	0.0
3	Manoharbahal UG	0.0	735.0	-	0.0
4	Bhanora West UG & OC	0.74	680.0	>20	0.06
	Total	0.74	2313.0		0.06

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 No. 7			
Station Code	Type of Station	Name of Station	Station Category
7A1	Permanent Air Station	Barmundia Colliery Office	Industrial
7A2	Post monsoon Air Station	Gobindpur Village, Asansol	Residential
7A3	Post monsoon Air Station	Adjoy -II Colliery	Industrial
7A4	Post monsoon Air Station	Bhanora West Block Colliery	Industrial
7A5	Pre monsoon Air Station	Salanpur Area Office	Industrial
7A6	Pre monsoon Air Station	Choti Raniganj Village	Residential
7A7	Pre monsoon Air Station	Kelejora Block Health Center (BHC)	Residential

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 2 earmarked dugwells (7GW1- Dugwell at Janardan Sayer village near Lalganj Hatia & 7GW3- Dugwell at Gobindpur village, backside of Biswanath Weigh Bridge) 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, 2022 are appended as Annexures – I, II, III & IV. The environmental monitoring results for the year 2021-22 are summarized below:

AMBIENT AIR QUALITY

The PM₁₀ concentration at industrial locations was found in the range of 56.9 to 359.0 µg/m³ and has exceeded the limits on 2 occasions out of 72 samples analysed during the year as prescribed in the standards of GSR 742 (E) dated 25.09.2000 while the PM₁₀ concentration at residential locations was found in the range of 68.4 to 99.5 µg/m³ and was within the limits during the year as prescribed in the standards of NAAQS, 2009. The PM_{2.5} concentration was found in the range of 13.6 to 57.2 µg/m³ and was within the limits as per NAAQS, 2009. However, no limit is defined as per GSR 742 (E) dated 25.09.2000. The SO₂ concentration remained below 10.0 µg/m³ and NO_x concentration was in the range of 12.5 to 23.4 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 3 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 and noise time noise level was found in the range of 57.16 to 76.59 dB(A) and 34.82 to 69.89 dB(A) respectively. The noise level recorded is below permissible limit prescribed by MoEF&CC barring few occasions.

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, 2022

PART – A

(I) NAME AND ADDRESS OF THE PROJECT

#	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	30.09.2021

PART – B

WATER AND RAW MATERIAL CONSUMPTION

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

1. Bhanora West UG & OC

#	Particulars	2020-21	2021-22
A.	MINING (Dust suppression, Firefighting, Others)	158.0	25.0
B.	COOLING (in radiators of trucks/HEMM/workshop)	0.0	0.0
C.	DOMESTIC		
i	Colony (Mine water and PHED supply)	-	985.0
TOTAL		158.0	1010.0

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2020-21	2021-22
Coal	1.05	0.45

(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 (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	0.44 kg/te	-
2. Diesel		0.48 l/te	-
3. Lubricants		0.24 l/te	-

*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 (2020-21)	During current financial year (2021-22)
1. Explosive	Coal	5.48 kg/te	-
2. Diesel		-	-
3. Lubricants		-	-

**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*	-	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 except at few occasions as explained in the earlier section.
	AIR*	Total pollutant load of PM ₁₀ is 312.73 kg/day while it is 85.66 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 (2020-21)	During current financial year (2021-22)	
A) From process			
i) Used oil	-	-	Dealt in Part – F
ii) Lead-Acid Batteries			
a. Automobile batteries	-	-	
b. Cap-lamp batteries	-	-	
iii) Used Cotton waste	-	-	
iv) Metal Scrap	10 tonnes	10 tonnes	

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 (2020-21)	During current financial year (2021-22)
a) From process (Mining)	1.16	0.44
b) From pollution control facilities	-	-
c) Quantity recycled or reutilized back filled	0.47	-

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 coal transport road and haul roads.
- c) Regular sprinkling of water at coal loading & discharge points with the help of stand post at Railway siding.
- d) Plantation will be carried out as per the proposed schedule.

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.
- b. Water is settled before discharge into natural streams.
- c. Filtered mine water is supplied to the residential colonies.

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 & Climate Change (MoEF&CC).
- c) Necessary Consent for discharge may be taken from Competent Authority, if required.

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 & Climate Change (MoEF&CC) and based on the result thereof; colliery takes necessary action if needed.

Annexure – I

AMBIENT AIR QUALITY

Station Code	Station Name	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
7A1	Barmundia Colliery Office	2-Apr-21	289.9	56.8	BDL	18.4
7A1	Barmundia Colliery Office	30-Apr-21	157.4	46.3	BDL	17.8
7A1	Barmundia Colliery Office	6-May-21	140.8	42.6	BDL	17.8
7A1	Barmundia Colliery Office	18-May-21	141.3	41.8	BDL	17.5
7A1	Barmundia Colliery Office	15-Jun-21	60.8	26.1	BDL	14.2
7A1	Barmundia Colliery Office	29-Jun-21	93.2	32.6	BDL	13.8
7A1	Barmundia Colliery Office	12-Jul-21	93.2	29.5	BDL	15.1
7A1	Barmundia Colliery Office	23-Jul-21	90.5	26.0	BDL	14.6
7A1	Barmundia Colliery Office	9-Aug-21	113.0	48.0	BDL	15.1
7A1	Barmundia Colliery Office	27-Aug-21	82.5	33.0	BDL	14.8
7A1	Barmundia Colliery Office	6-Sep-21	80.3	28.6	BDL	14.7
7A1	Barmundia Colliery Office	24-Sep-21	78.3	27.2	BDL	14.5
7A1	Barmundia Colliery Office	12-Oct-21	117.4	28.8	BDL	16.7
7A1	Barmundia Colliery Office	26-Oct-21	94.3	36.7	BDL	15.4
7A1	Barmundia Colliery Office	15-Nov-21	87.5	24.6	BDL	19.5
7A1	Barmundia Colliery Office	29-Nov-21	155.8	28.7	BDL	18.7
7A1	Barmundia Colliery Office	10-Dec-21	194.4	38.2	BDL	23.4
7A1	Barmundia Colliery Office	29-Dec-21	236.4	49.5	BDL	20.7
7A1	Barmundia Colliery Office	4-Jan-22	186.5	33.6	BDL	20.3
7A1	Barmundia Colliery Office	24-Jan-22	206.4	51.7	BDL	19.8
7A1	Barmundia Colliery Office	7-Feb-22	232.7	54.4	BDL	18.9
7A1	Barmundia Colliery Office	16-Feb-22	258.6	47.4	BDL	16.4
7A1	Barmundia Colliery Office	4-Mar-22	183.6	46.8	BDL	16.4
7A1	Barmundia Colliery Office	23-Mar-22	342.6	31.3	BDL	21.3
7A2	Gobindpur Village, Asansol	12-Oct-21	56.9	13.6	BDL	17.6
7A2	Gobindpur Village, Asansol	26-Oct-21	73.4	28.9	BDL	14.7
7A2	Gobindpur Village, Asansol	15-Nov-21	63.5	18.7	BDL	16.2
7A2	Gobindpur Village, Asansol	29-Nov-21	76.3	19.6	BDL	14.2
7A2	Gobindpur Village, Asansol	10-Dec-21	86.5	31.5	BDL	15.7
7A2	Gobindpur Village, Asansol	29-Dec-21	94.7	38.2	BDL	14.4
7A2	Gobindpur Village, Asansol	14-Jan-22	91.6	38.7	BDL	13.2
7A2	Gobindpur Village, Asansol	25-Jan-22	96.3	26.6	BDL	13.4
7A2	Gobindpur Village, Asansol	14-Feb-22	76.6	38.7	BDL	12.5
7A2	Gobindpur Village, Asansol	16-Feb-22	107.4	28.9	BDL	15.8
7A2	Gobindpur Village, Asansol	2-Mar-22	97.3	27.4	BDL	13.4
7A2	Gobindpur Village, Asansol	21-Mar-22	89.3	32.5	BDL	14.3
7A3	Adjoy II Colliery	12-Oct-21	73.2	15.8	BDL	15.2
7A3	Adjoy II Colliery	25-Oct-21	88.5	34.6	BDL	12.8
7A3	Adjoy II Colliery	12-Nov-21	146.8	34.8	BDL	17.5
7A3	Adjoy II Colliery	29-Nov-21	184.4	42.3	BDL	18.6
7A3	Adjoy II Colliery	9-Dec-21	177.4	48.5	BDL	19.4
7A3	Adjoy II Colliery	29-Dec-21	157.4	26.8	BDL	21.3
7A3	Adjoy II Colliery	4-Jan-22	194.4	21.5	BDL	20.8
7A3	Adjoy II Colliery	17-Jan-22	187.3	36.2	BDL	18.4
7A3	Adjoy II Colliery	14-Feb-22	193.5	29.4	BDL	18.3
7A3	Adjoy II Colliery	17-Feb-22	183.7	22.6	BDL	22.7
7A3	Adjoy II Colliery	4-Mar-22	176.5	49.4	BDL	21.5
7A3	Adjoy II Colliery	22-Mar-22	187.3	57.2	BDL	15.7
7A4	Bhanora West Block Colliery	11-Oct-21	94.2	36.4	BDL	12.7
7A4	Bhanora West Block Colliery	25-Oct-21	116.5	29.5	BDL	14.7

Station Code	Station Name	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
7A4	Bhanora West Block Colliery	15-Nov-21	127.5	42.7	BDL	18.4
7A4	Bhanora West Block Colliery	25-Nov-21	142.8	33.1	BDL	17.6
7A4	Bhanora West Block Colliery	9-Dec-21	228.5	38.3	BDL	22.7
7A4	Bhanora West Block Colliery	28-Dec-21	184.3	41.4	BDL	19.8
7A4	Bhanora West Block Colliery	14-Jan-22	132.5	42.7	BDL	19.7
7A4	Bhanora West Block Colliery	25-Jan-22	176.3	33.3	BDL	20.2
7A4	Bhanora West Block Colliery	15-Feb-22	143.3	51.9	BDL	22.7
7A4	Bhanora West Block Colliery	17-Feb-22	136.2	49.5	BDL	17.3
7A4	Bhanora West Block Colliery	4-Mar-22	218.4	37.6	BDL	19.7
7A4	Bhanora West Block Colliery	23-Mar-22	208.6	49.9	BDL	18.7
7A5	Salanpur Area Office	2-Apr-21	98.4	35.6	BDL	16.5
7A5	Salanpur Area Office	23-Apr-21	359.0	22.0	BDL	16.9
7A5	Salanpur Area Office	6-May-21	97.2	36.1	BDL	16.6
7A5	Salanpur Area Office	18-May-21	98.6	36.9	BDL	16.2
7A5	Salanpur Area Office	14-Jun-21	57.3	24.4	BDL	14.0
7A5	Salanpur Area Office	29-Jun-21	89.1	27.0	BDL	13.5
7A5	Salanpur Area Office	12-Jul-21	63.0	16.0	BDL	14.2
7A5	Salanpur Area Office	23-Jul-21	65.4	14.0	BDL	13.8
7A5	Salanpur Area Office	9-Aug-21	76.2	31.4	BDL	14.4
7A5	Salanpur Area Office	30-Aug-21	75.1	28.4	BDL	14.2
7A5	Salanpur Area Office	6-Sep-21	72.0	23.4	BDL	14.2
7A5	Salanpur Area Office	24-Sep-21	70.0	22.7	BDL	14.0
7A6	Choti Raniganj Village	2-Apr-21	93.4	32.9	BDL	16.0
7A6	Choti Raniganj Village	30-Apr-21	94.0	33.1	BDL	16.1
7A6	Choti Raniganj Village	7-May-21	92.7	33.4	BDL	16.1
7A6	Choti Raniganj Village	26-May-21	93.2	33.1	BDL	15.9
7A6	Choti Raniganj Village	10-Jun-21	90.2	31.4	BDL	14.2
7A6	Choti Raniganj Village	29-Jun-21	83.8	27.6	BDL	13.2
7A6	Choti Raniganj Village	12-Jul-21	81.3	23.4	BDL	14.3
7A6	Choti Raniganj Village	23-Jul-21	74.3	20.6	BDL	14.0
7A6	Choti Raniganj Village	9-Aug-21	70.4	23.1	BDL	13.3
7A6	Choti Raniganj Village	30-Aug-21	68.4	22.3	BDL	13.1
7A6	Choti Raniganj Village	7-Sep-21	70.6	22.7	BDL	13.2
7A6	Choti Raniganj Village	29-Sep-21	69.3	22.4	BDL	13.0
7A7	Kelejora Block Health Center (BHC)	2-Apr-21	99.5	36.7	BDL	17.2
7A7	Kelejora Block Health Center (BHC)	30-Apr-21	98.7	36.4	BDL	17.0
7A7	Kelejora Block Health Center (BHC)	7-May-21	98.8	37.2	BDL	17.0
7A7	Kelejora Block Health Center (BHC)	26-May-21	97.3	36.8	BDL	16.4
7A7	Kelejora Block Health Center (BHC)	14-Jun-21	97.5	34.2	BDL	14.8
7A7	Kelejora Block Health Center (BHC)	29-Jun-21	91.6	30.7	BDL	13.9
7A7	Kelejora Block Health Center (BHC)	12-Jul-21	86.6	27.0	BDL	14.7
7A7	Kelejora Block Health Center (BHC)	28-Jul-21	78.6	21.8	BDL	14.2
7A7	Kelejora Block Health Center (BHC)	9-Aug-21	76.3	27.4	BDL	14.0
7A7	Kelejora Block Health Center (BHC)	30-Aug-21	74.3	24.2	BDL	13.7
7A7	Kelejora Block Health Center (BHC)	7-Sep-21	73.8	26.9	BDL	13.8
7A7	Kelejora Block Health Center (BHC)	29-Sep-21	72.5	25.3	BDL	13.6

AMBIENT AIR QUALITY METAL ANALYSIS

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
7A1	Barmundia colliery office	6-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
7A5	Salanpur area office	6-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
7A6	Choti Raniganj village	7-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
7A7	Kelejora block health center	7-Sep-21	BDL	BDL	BDL	BDL	BDL	BDL
7A1	Barmundia colliery office	23-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
7A2	Gobindpur village, Asansol	21-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
7A3	Adjoy ii colliery	22-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL
7A4	Bhanora west block colliery	23-Mar-22	BDL	BDL	BDL	BDL	BDL	BDL

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**

Station Code	Name of Station (Workplace)	Date of Sampling	Time (Hours)	Leq (Day)	Leq (Night)	Leq (Day-Night)
7N1	Bhanora West OCP	25-May-21	16.30 to 16.30	58.34	34.82	56.59
7N1	Bhanora West OCP	16-Aug-21	15.30 to 15.30	76.59	61.26	74.89
7N1	Bhanora West OCP	29-Dec-21	15.29 to 11.17	65.95	64.74	65.51
7N1	Bhanora West OCP	28-Feb-22	16.52 to 15.47	64.28	69.89	67.20
7N2	Bhanora West UG	24-May-21	16.00 to 16.00	61.78	41.64	60.04
7N2	Bhanora West UG	16-Aug-21	14.30 to 14.30	63.84	52.47	62.23
7N2	Bhanora West UG	28-Dec-21	16.45 to 10.25	57.16	47.72	55.26
7N2	Bhanora West UG	28-Feb-22	16.38 to 15.22	71.54	61.35	69.81

EFFLUENT WATER QUALITY (5 PARAMETERS)

Station Code	Station Name	Date of Sampling	pH	TSS	TDS	O&G	COD
7MW1	Bhanora West OC	8-Apr-21	7.42	18.4	438	BDL	32
7MW1	Bhanora West OC	17-Apr-21	7.03	16.2	445	BDL	28
7MW1	Bhanora West OC	12-May-21	7.28	19.4	482	BDL	32
7MW1	Bhanora West OC	31-May-21	7.27	19.0	477	BDL	24
7MW1	Bhanora West OC	5-Jun-21	7.39	15.8	464	BDL	20
7MW1	Bhanora West OC	22-Jun-21	7.21	14.6	452	BDL	32
7MW1	Bhanora West OC	7-Jul-21	7.28	15.6	466	BDL	36
7MW1	Bhanora West OC	29-Jul-21	7.30	15.8	471	BDL	40
7MW1	Bhanora West OC	3-Aug-21	7.14	BDL	432	BDL	12
7MW1	Bhanora West OC	28-Aug-21	6.82	BDL	345	BDL	24
7MW1	Bhanora West OC	14-Sep-21	7.06	BDL	355	BDL	32
7MW1	Bhanora West OC	8-Oct-21	7.81	BDL	355	BDL	20
7MW1	Bhanora West OC	27-Oct-21	8.42	BDL	361	BDL	32
7MW1	Bhanora West OC	3-Dec-21	6.88	BDL	415	BDL	24
7MW1	Bhanora West OC	24-Dec-21	7.55	BDL	432	BDL	8
7MW1	Bhanora West OC	6-Jan-22	7.92	BDL	452	BDL	16
7MW1	Bhanora West OC	24-Jan-22	7.52	11.32	413	2.36	12
7MW1	Bhanora West OC	7-Feb-22	6.63	BDL	409	BDL	4
7MW1	Bhanora West OC	22-Feb-22	7.7	BDL	417	BDL	4
7MW1	Bhanora West OC	17-Mar-22	7.65	BDL	431	2.34	16
7MW2	Bhanora West UG	8-Apr-21	7.33	17.2	545	BDL	24
7MW2	Bhanora West UG	17-Apr-21	7.28	15.8	552	BDL	20
7MW2	Bhanora West UG	12-May-21	7.36	16.5	561	BDL	16
7MW2	Bhanora West UG	31-May-21	7.59	16.2	564	BDL	20
7MW2	Bhanora West UG	5-Jun-21	7.12	16.0	543	BDL	24
7MW2	Bhanora West UG	22-Jun-21	7.23	16.8	564	BDL	36
7MW2	Bhanora West UG	7-Jul-21	7.21	16.1	538	BDL	40
7MW2	Bhanora West UG	29-Jul-21	7.24	16.6	553	BDL	44
7MW2	Bhanora West UG	3-Aug-21	7.36	16.6	518	BDL	24
7MW2	Bhanora West UG	28-Aug-21	6.89	13.9	413	BDL	28
7MW2	Bhanora West UG	14-Sep-21	6.96	16.6	408	BDL	36
7MW2	Bhanora West UG	8-Oct-21	8.59	10	411	BDL	32
7MW2	Bhanora West UG	27-Oct-21	8.5	BDL	407	BDL	24
7MW2	Bhanora West UG	3-Dec-21	6.84	BDL	382	BDL	28
7MW2	Bhanora West UG	24-Dec-21	7.20	BDL	368	BDL	4
7MW2	Bhanora West UG	6-Jan-22	7.89	BDL	402	3.18	16
7MW2	Bhanora West UG	24-Jan-22	7.55	12.48	385	BDL	20
7MW2	Bhanora West UG	7-Feb-22	6.89	BDL	398	BDL	8
7MW2	Bhanora West UG	22-Feb-22	7.79	BDL	389	BDL	8
7MW2	Bhanora West UG	17-Mar-22	7.41	BDL	380	BDL	12

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)

Sl. No.	Parameters	Analytical Results				General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	24-Sep-21	24-Sep-21	12-Mar-22	12-Mar-22			
1	Colour	4	3	4	3	Unobjectionable	IS 3025 (Part 6): 2018	1.0
2	Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	IS 3025 (Part 6): 2018	-
3	TSS	BDL	BDL	BDL	BDL	100	IS 3025 (Part 17): 1984	10
4	pH	6.93	7.17	7.32	7.59	5.5-9.0	IS 3025 (Part 11): 1983	0.01
5	Temperature (°C)	29.5	29.4	26.0	26.1	Shall not exceed 5 °C above the receiving water temperature	IS 3025 (Part 9): 1984	0.1
6	Oil & Grease	BDL	BDL	BDL	BDL	10	IS 3025 (Part 39): 1991	2.0
7	Total Residual Chlorine	BDL	BDL	BDL	BDL	1.0	APHA 4500G DPD Colorimetric	0.02
8	Ammonical Nitrogen	0.48	0.64	0.69	0.65	50	IS 3025 (Part 34): 1988	0.01
9	Total Kjeldahi Nitrogen	1.82	1.54	1.61	1.74	100	IS 3025 (Part 34): 1988	1.0
10	Free Ammonia	BDL	BDL	BDL	BDL	5.0	IS 3025 (Part 34): 1988	0.02
11	BOD	7	7	4.81	3.27	30	IS 3025 (Part 44): 1993	2.0
12	COD	40	28	12	24	250	APHA 5220C Closed Reflux	4.0
13	Arsenic	BDL	BDL	BDL	BDL	0.2	APHA 3112B AAS VGA	0.002
14	Lead	BDL	BDL	BDL	BDL	0.1	APHA 3113B AAS GTA	0.005
15	Hexavalent Chromium	BDL	BDL	BDL	BDL	0.1	APHA 3500B Colorimetric	0.01
16	Total Chromium	BDL	BDL	BDL	BDL	2.0	APHA 3111B AAS Flame	0.04
17	Copper	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.03
18	Zinc	BDL	0.01	BDL	0.02	5.0	APHA 3111B AAS Flame	0.01
19	Selenium	BDL	BDL	BDL	BDL	0.05	APHA 3111B AAS Flame	0.002
20	Nickel	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.01
21	Fluoride	0.40	0.38	0.26	0.31	2.0	APHA 4500D SPANDS	0.02
22	Dissolved Phosphate	1.68	1.78	1.64	1.72	5.0	APHA 4500C Vanadomolybdophosphoric acid	0.30
23	Sulphide	0.006	0.008	0.008	0.006	2.0	APHA 4500 D Methylene Blue	0.005
24	Phenolics	BDL	BDL	BDL	BDL	1.0	IS 3025 (Part 43): 1992	0.001
25	Manganese	BDL	BDL	BDL	BDL	2.0	APHA 3111B AAS Flame	0.02
26	Iron	BDL	BDL	BDL	BDL	3.0	APHA 3111B AAS Flame	0.06
27	Nitrate Nitrogen	3.8	4.0	4.2	4.5	10	IS 3025 (Part 34): 1988	0.5
28	Cadmium	BDL	BDL	BDL	BDL	2.0	APHA 3113B AAS GTA	0.0005
29	Total Dissolved Solids	365	405	413	390	Not Specified	IS 3025 (Part 16): 1984	25.0

Note: All parameters in mg/l unless otherwise specified

Annexure – III

GROUNDWATER QUALITY

Sl. N o.	Parameters	Analytical Results			Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	7GW1	7GW2	7GW3	Acceptable Limit	Permissible Limit		
	Sampling Date	7-May-21	28-May-21	10-May-21				
1	Colour, Hazen	2	4	4	5.0	15.0	APHA, 2120 C	1.0 Hazen
2	Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable		IS 3025 Part 5: 2018	-
3	Taste	Agreeable	Agreeable	Agreeable	Agreeable		IS 3025 (Part 7):1984	-
4	Turbidity, NTU	2.2	1.6	1.4	1	5	IS 3025 (Part 10):1984	1.0 NTU
5	pH value	6.66	7.64	7.32	6.5-8.5	No relaxation	IS 3025 Part 11: 2017	0.01
6	Total Hardness	28	306	190	300	600	IS 3025 Part 21: 2019	4.0
7	Iron	BDL	BDL	BDL	0.3	No relaxation	IS 3025 Part 53: 2019	0.06
8	Chlorides	7	51	18	250	1000	IS 3025 Part 32: 2019	2.0
9	Res Free Chlorine	BDL	BDL	BDL	0.2	1	APHA, 4500-Cl F	0.02
10	Dissolved Solids	822	1228	864	500	2000	IS 3025 Part 16: 2017	10.0
11	Calcium	22	81	40	75	200	IS 3025 Part 40: 2019	1.60
12	Copper	BDL	BDL	BDL	0.05	1.5	IS 3025 Part 42: 2019	0.03
13	Manganese	BDL	BDL	BDL	0.1	0.3	IS 3025 Part 59: 2017	0.02
14	Sulphate	59	110	76	200	400	APHA, 4500-SO ₄ ²⁻ E	2.0
15	Nitrate	8.32	9.72	12.78	45	No relaxation	APHA, 4500-NO ₃ ⁻ B	0.5
16	Fluoride	1.04	0.64	0.48	1	1.5	APHA, 4500-F D	0.02
17	Selenium	BDL	BDL	BDL	0.01	No relaxation	IS 3025 (Part 56):2003	0.002
18	Arsenic	BDL	BDL	BDL	0.01	0.05	IS 3025 (Part 37):1988	0.002
19	Lead	BDL	BDL	BDL	0.01	No relaxation	APHA, 3113 B	0.005
20	Zinc	BDL	BDL	BDL	5	15	AAS Flame	0.01
21	Hex Chromium	BDL	BDL	BDL	0.05	0.05	APHA, 3500-Cr B	0.01
22	Boron	BDL	BDL	BDL	0.5	1	IS 3025 (Part 57):2005	0.20
23	Coliforms (MPN)	NIL	NIL	NIL	Not Specified		APHA, 9221 B	1.0
24	Phenolics	NIL	NIL	NIL	0.001	0.002	IS 3025 (Part 43):1992	0.001
25	Alkalinity	88	220	160	200	600	IS 3025 Part 23: 2019	4.0
26	Cadmium	BDL	BDL	BDL	0.003	No relaxation	APHA, 3111 B	0.0005

Note: All parameters in mg/l unless otherwise specified.

Annexure – IV**GROUNDWATER LEVEL**

Code	Station Name	Date	Water Level (m)
7GWL1	Dugwell at Janardan Sayer village near lalganj Hatia	25-May-21	2.15
7GWL1	Dugwell at Janardan Sayer village near lalganj Hatia	2-Aug-21	1.75
7GWL1	Dugwell at Janardan Sayer village near lalganj Hatia	16-Nov-21	1.80
7GWL1	Dugwell at Janardan Sayer village near lalganj Hatia	15-Jan-22	2.30
7GWL2	Dugwell at Bhanora village main road side Mahadeb Smritinilay	24-May-21	10.35
7GWL2	Dugwell at Bhanora village main road side Mahadeb Smritinilay	28-Aug-21	1.25
7GWL2	Dugwell at Bhanora village main road side Mahadeb Smritinilay	16-Nov-21	2.20
7GWL2	Dugwell at Bhanora village main road side Mahadeb Smritinilay	25-Jan-22	2.55
7GWL3	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	24-May-21	6.70
7GWL3	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	2-Aug-21	0.30
7GWL3	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	26-Nov-21	1.90
7GWL3	Dugwell at Gobindpur village, backside of Biswanath weigh bridge	14-Jan-22	2.90

Piezometer water level

Station Code	Location of Piezometer	Date of measurement	Water level (in Meters) Below Ground Level
7/SR/BP-02	Sripur (West Bhanora)	24-May-21	14.80
7/SR/BP-02	Sripur (West Bhanora)	16-Aug-21	9.60
7/SR/BP-02	Sripur (West Bhanora)	22-Nov-21	9.52
7/SR/BP-02	Sripur (West Bhanora)	25-Jan-22	10.40

Plate - 1

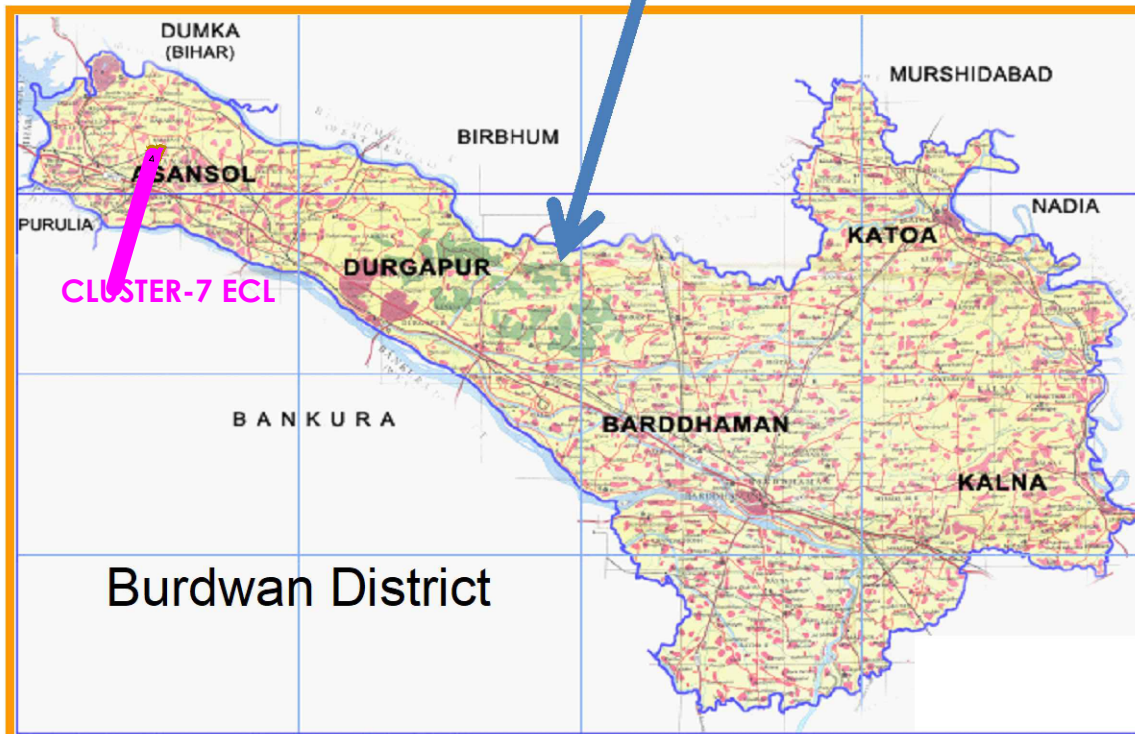
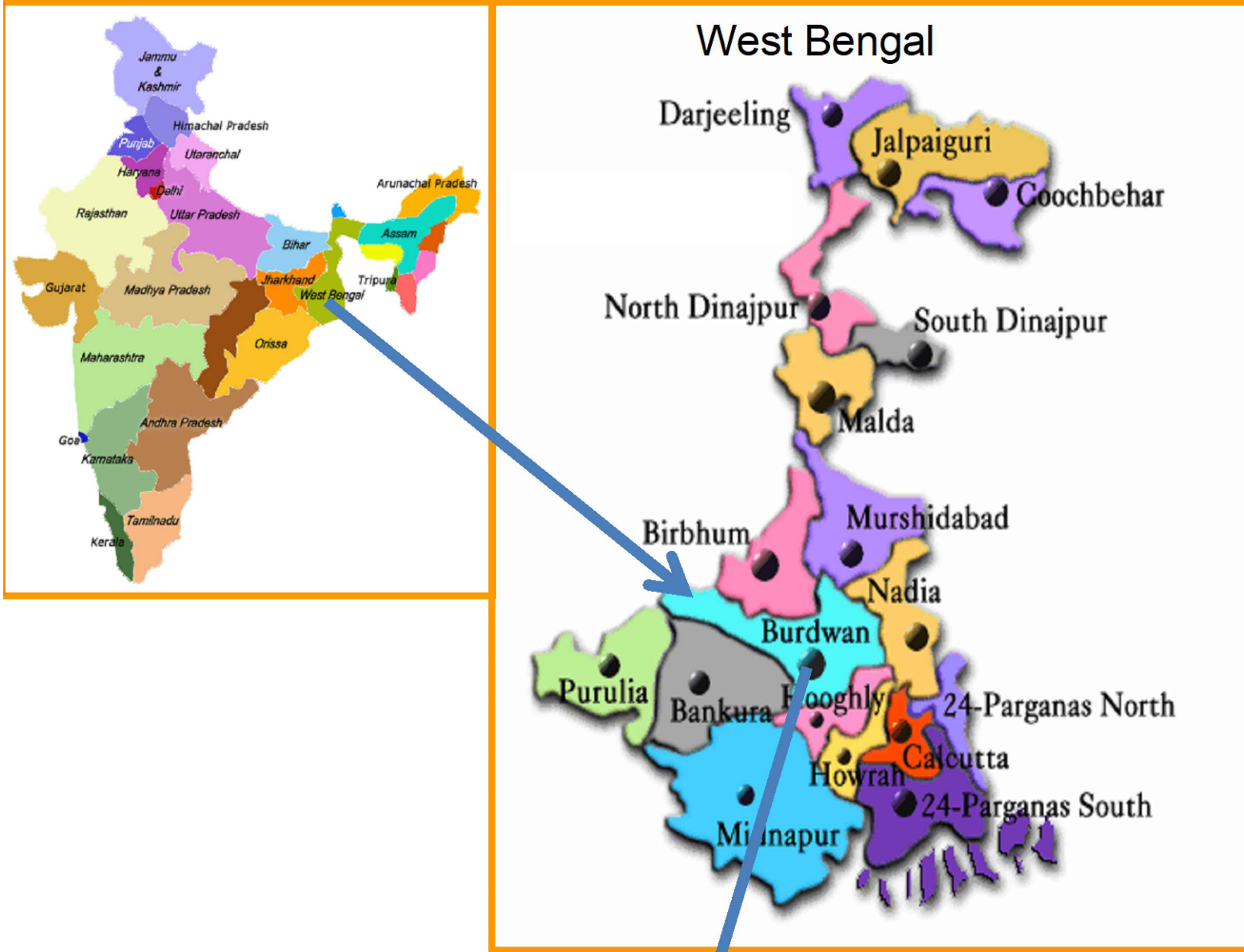


PLATE NO. 1

CUSTOMER: EASTERN COALFIELDS LIMITED		JOB NO 111763	
ENVIRONMENTAL STATEMENT FOR CLUSTER NO. 7			
SUBJECT:			
LOCATION PLAN			
Activity	Name	Designation	Signature
Prepared by			
Reviewed by			
Checked by			
Approved by			
Scale 0 500 1000 M		Sheet	
CMPDI ISO 9001 Company		REV. No. 0	

AIR QUALITY MONITORING STATIONS

Station Code	Type of Station	Name of Station
● 7A1	Permanent Air Station	Barmundia Colliery Office
● 7A2	Post monsoon Air Station	Gobindpur Village, Asansol
● 7A3	Post monsoon Air Station	Adjoy -II Colliery
● 7A4	Post monsoon Air Station	Bhanora West Block Colliery
● 7A5	Pre monsoon Air Station	Salanpur Area Office
● 7A6	Pre monsoon Air Station	Choti Raniganj Village
● 7A7	Pre monsoon Air Station	Kelejora Block Health Center (BHC)

NOISE SAMPLING STATIONS

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

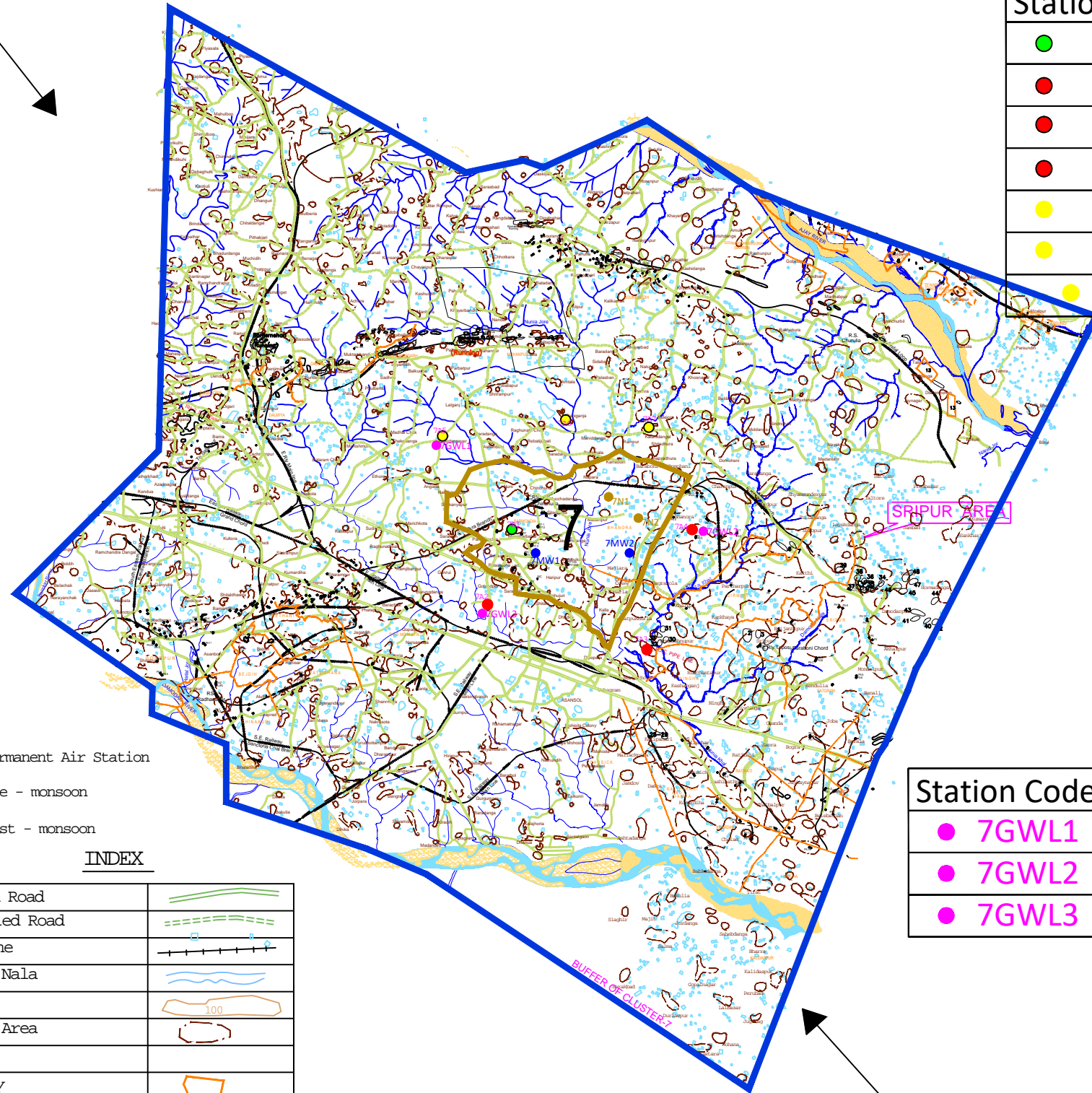
MINE/ EFFLUENT WATER STATIONS

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

GROUND WATER LEVEL

Station Code	Location of Dug Well
● 7GWL1	Dugwell at Janardansayar village near Lalganj Hatia
● 7GWL2	Dugwell at Bhanora village main roadside Mahadev Smritinilay
● 7GWL3	Dugwell at Gobindpur village, backside of Biswanath weigh bridge

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



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

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.

INDEX

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

PLATE NO.- 2

Customer	EASTERN COALFIELDS LTD.				
Job Title	ENVIRONMENTAL STATEMENT OF CLUSTER NO. 7			Job No.	111763
Subject	Activity	Name	Designation	Signature	Date
LOCATION OF MONITORING STATIONS	Checked				
	Approved				
Scale		Sheet			
Dwg.No.	R1	ENV			REV.No.

