

**ENVIRONMENTAL STATEMENT
IN
FORM-V**

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

(2020-2021)

**FOR
CLUSTER NO. – 3
(GROUP OF MINES)
Salanpur 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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A Maharatna Company
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CMPDI

ISO 9001:2015 Company

ENVIRONMENTAL STATEMENT FORM – V

Environmental statement for the financial year ending 31st March, 2021

Cluster No. – 3

FOR THE YEAR: 2020-21

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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. 3 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 of Mines No. 3 is one of the clusters for which EC has been granted vide letter no. J-11015/13/2010-IA-II.(M) dated 20th October, 2014 for a combined peak capacity of 3.97 MTY and within a ML area of 1628 Ha.

Meanwhile, in view of the production target set by CIL, a re-assessment of mine capacities has been carried out for the cluster while keeping the overall cluster capacity unchanged. However, there is interchange of lease of the mines within the cluster but overall leasehold area of the cluster remains same. This re-assessment / rationalization have been done based on present condition and capability of the mines for achieving optimum production levels. The proposed changes are in line with the revised mining plan for the cluster, duly approved by the Board of Directors of ECL on 07.12.2018. The changes with reference to the approved EC have been shown in table below:

Environmental Statement (Form-V) Cluster No. – 3 (Group of Mines) 2020-21

Sl. No. (as per Leasehold)	Name of the Mine	Leasehold Area (Ha)	Existing EC Capacity (MTY)	Life (Years)	Sl. No. (as per Leasehold)	Name of the Mine	Revised Leasehold Area (Ha)	Revised Capacity* (MTY)	Revised Life (Years)	Remarks
As per EC dated 20.10.2014					As per Revised Proposal					
1	Dabor UG	1204.00	0.07	>25	1	Dabor OC	1063.00**	2.30	>25	Capacity Reduction and Boundary Adjustment with Bonjemehari UG & OC
	Dabor OC		2.30	10						
2	Bonjemehari UG	163.00	0.07	>25	2	Bonjemehari OC	304.00**	1.47	>25	Capacity Enhancement & Boundary Adjustment with Dabor UG & OC
	Bonjemehari OC		0.45	4						
3	Sangramgarh UG	261.00	0.08	>25	3	Sangramgarh OC	261.00	0.20	>25	Capacity Reduction
	Sangramgarh OC		1.00	4						
Total		1628.00	3.97		Total		1628.00	3.97		

* EC is sought for the revised capacity. ** Area of 141.0 Ha transferred from Dabor to Bonjemehari.

EC amendment proposal was considered in the EAC held on 24.01.2019 and 24.04.2019. EAC in its 44th meeting approved the proposal. This report has been prepared on the basis of EC Amendment granted in August, 2019.

Cluster No. 3 is located in the north-western part of Raniganj Coalfield in Burdwan district of West Bengal between latitudes 23^o44'30" N & 23^o48' N and longitudes 86^o 52' 15"E & 86^o 56' 30" E.

It is situated at about 10 kms north of Asansol and 40 kms west of Durgapur. The area is well connected by roads and railways. The Eastern Railway Main line passes through the western part of the block. Bonjemehari railway siding is present on the above railway line inside the cluster. G.T.Road (NH-2) passes on the south of the block. Maithon reservoir, a multipurpose project of Damodar Valley Corporation, built over river Barakar is at a distance of 6 Kms west of the cluster boundary. River Ajay flows about 5 kms north of the cluster.

It comes under the administrative control of Salanpur area, ECL.

Location of Cluster No. 3 is shown in plate no. – 1.

The composition of the cluster is tabulated as under:

#	Name of Mine	Leasehold Area (Ha)	Peak Capacity (MTY)	Life (Years)	Production during 2020-21 (MT)
1	Dabor OC	1063	2.30	> 25	1.38
2	Bonjemehari OC	304	1.47	> 25	0.34
3	Sangramgarh OC	261	0.20	> 25	0.0
	Total	1628	3.97	-	1.72

1. Dabor OC

In the OC mine, shovel-dumper combination is used for both coal production and OB removal.

2. Bonjemehari OC

In the OC mine, shovel-dumper combination is used for both coal production and OB removal.

3. Sangramgarh OC

At present, there is no production from the mine.

1.3 ENVIRONMENTAL SCENARIO:

CMPDI has been engaged to carry out routine Environmental monitoring of the clusters. The monitoring is carried out every fortnight by collecting 24 – hour samples for ambient air at 2 (two) all - weather stations, 3 (three) pre-monsoon stations and 3 (three) post-monsoon stations (based on local meteorology) and compared with standards for quality. The details of the sampling stations are given below:

Cluster No. 3		
Station Code	Type of Station	Name of Station
3A1	Permanent Air Station	Agent Office, Bonjemehari Colliery
3A2	Post monsoon Air Station	Melekola Sevashram Sangha (Bimalananda Paramhans), Melekola Village
3A3	Post monsoon Air Station	Fulberia Village
3A4	Post monsoon Air Station	Salanpur Area Office
3A5	Pre monsoon Air Station	Dispensary Of Dabor Colliery
3A6	Pre monsoon Air Station	Achra J I High School
3A7	Pre monsoon Air Station	Manager Office Dabor Colliery
3A8	Permanent Air Station	Bonjemehari Workshop Near Railway Siding

4 nos. of Samples of mine water are 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 samples which includes heavy metals and salts is carried out twice every year. Noise level is recorded at 3 locations from the mine pit top (in case of UG mine) and workshops (in case of OC mine) present within the cluster. Groundwater level in the cluster area is monitored by taking measurements at 3 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.

A piezometer has been constructed to measure the ground water level at Bonjemehari OCP Campus, Salanpur Area of cluster no 3. Location of the monitoring stations of air, noise & water are shown in Plate- II.

The environmental monitoring results for 24 fortnights ending 31st March, 2021 are appended as Annexures – I, II & III. The environmental monitoring results for the year 2020-21 are summarized below:

AMBIENT AIR QUALITY

The PM₁₀ concentration at industrial locations was found in the range of 14.9 to 730.4 µg/m³ and concentration levels has exceeded the standards on 10 occasions out of 68 samples analysed during the year while PM₁₀ concentration at residential locations was found in the range of 85.2 to 99.8 µg/m³ and were within the limits as per NAAQS, 2009. The PM_{2.5} concentration at industrial locations was found in the range of 40.0 to 131.0 µg/m³ and has

exceeded the standards prescribed as per NAAQS, 2009 on 8 occasions out of 100 samples analysed during the year. The SO₂ concentration remained below 10.0 µg/m³ and NO_x concentration was in the range of 13.9 to 21.6 µg/m³ and was well within the limits.

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

Ground water percolates into working area from the surrounding aquifers which have been exposed due to opencast mining. The mine is dewatered regularly to maintain dry working conditions. This mine discharge water is partly utilized for dust suppression by sprinkling at coal faces and on haul roads and the remainder is discharged onto adjoining cultivable lands for irrigation purposes. Part-B of the Environmental Statement proforma contains the detailed break-up of water consumption.

The analysis results for the mine discharge water 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.

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 and piezometer level results are given in Annexure – IV.

NOISE LEVEL

The day time noise level was found in the range of 52.6 to 81.9 dB(A) and has exceeded the limit on 1 occasion out of 10 samples measured.

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, 2021

PART – A

SL. NO.	HEADING	PARTICULARS
(I)	NAME AND ADDRESS OF THE PROJECT	Cluster No. – 3 (Group of 3 Mines of ECL)
i	Dabor UG & OC	Dabor Colliery, P.O. – Samdih, P.S. – Salanpur, Burdwan, West Bengal, 713359
ii	Bonjemehari UG & OC	Bonjemehari Colliery, PO – Salanpur, Burdwan, West Bengal, 713357
iii	Sangramgarh UG	Sangramgarh Colliery, PO – Samdih, Burdwan, West Bengal, 713359
(II)	INDUSTRY CATEGORY	All mines in the cluster fall in red category
(III)	PRODUCTION CAPACITY	3.97 MTY
(IV)	YEAR OF ESTABLISHMENT	All the mines in the cluster are taken over mines from pre-nationalisation period.
(V)	DATE OF THE LAST ENVIRONMENTAL STATEMENT SUBMITTED	16.09.2020

PART – B

WATER AND RAW MATERIAL CONSUMPTION

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

1. Dabor OC

Sl. No.	Particulars	2019-20	2020-21
A.	MINING (Dust suppression, Firefighting and Others)	120.0	120.0
B.	COOLING (in radiators of trucks/HEMM & workshop)	0.10	0.15
C.	DOMESTIC		
i	Colony (Mine water)	12.0	12.5
ii	Colony (PHED water)	24.0	28.0
TOTAL		156.10	160.65

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2019-20	2020-21
Coal	0.12	0.09

2. Bonjemehari OC

Sl. No.	Particulars	2019-20	2020-21
A.	MINING (Dust suppression, Firefighting and Others)	100.0	100.0
B.	COOLING – DVC water (in radiators of trucks/HEMM & workshop)	12.0	12.0
C.	DOMESTIC		
i	Colony (Mine water)	400.0	400.0
ii	Colony (PHED water)		
TOTAL		512.0	512.0

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2019-20	2020-21
Coal	0.27	0.33

(II) RAW MATERIAL CONSUMPTION :

1. Dabor OC

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2019-20)	During current financial year (2020-21)
1. Explosive	Coal	1.63 kg/te	1.11 kg/te
2. Diesel		4.74 l/te	4.77 l/te
3. Lubricants		0.003 l/te	3.25 l/te

2. Bonjemehari OC

Name of raw material	Name of products	Consumption of raw material per unit of output	
		During previous financial year (2019-20)	During current financial year (2020-21)
1. Explosive	Coal	-	-
2. Diesel		-	-
3. Lubricants		-	-

**PART – C
POLLUTION GENERATED**

Mine	Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of Pollutants in discharges	Percentage variation from prescribed standards with reasons
Dabor OC	WATER*	Average concentration of 24.0 mg/l. Mine water discharged is 518.40 KL/day. Hence, total load is 12.44 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 except few occasions as explained earlier.
	AIR**	Total pollutant load of PM ₁₀ is 1939.30 kg/day while it is 324.75 kg/day for PM _{2.5} .		
Bonjemehari OC	WATER*	-		
	AIR**	Total pollutant load of PM ₁₀ is 608.04 kg/day while it is 128.79 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. Dabor OC

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2019-20)	During current financial year (2020-21)	
A) From process			Dealt in Part – F
i)Used oil	8272 Kl	11167 Kl	
ii)Lead-Acid Batteries			
a. Automobile batteries	Nil	08	
b. Cap-lamp batteries	Nil	Nil	
iii) Used Cotton waste	20.0 kg	27.0 kg	
iv) Metal Scrap	-	-	

2. Bonjemehari OC

Hazardous waste	Total quantity		Disposal method
	During previous financial year (2019-20)	During current financial year (2020-21)	
A) From process			Dealt in Part – F
i)Used oil	-	-	
ii)Lead-Acid Batteries			
a. Automobile batteries	03 Nos.	03 Nos.	
b. Cap-lamp batteries	Nil	Nil	
iii) Used Cotton waste	200 kg	200 kg	
iv) Metal Scrap	Nil	Nil	

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	Name of Mine	Total quantity (In Million Cu.m)	
		During previous financial year (2019-20)	During current financial year (2020-21)
a) From process (Mining)	Dabor OC	2.27	2.19
	Bonjemehari OC	0.93	0.90
b) From pollution control facilities	Dabor OC	-	-
	Bonjemehari OC	-	-
c) Quantity recycled or reutilized back filled	Dabor OC	2.17	1.88
	Bonjemehari OC	0.83	0.45

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.

Metal scraps are declared and report is sent to HQ. The scraps are then auctioned and sold through HQ.

Cotton waste generated is burned under control environment and also used as filtration bin.

Used oil are stored and re-used as lubricants in underground mines.

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:

- Surfacing of all service roads/permanent roads by asphalt.
- The un-metalled roads is kept free of ruts, potholes, etc. by regular cleaning.
- Regular maintenance of HEMM engines to limit emission of harmful exhaust fumes.
- Physical removal of dust from the roads.
- Greenbelts around quarry, industrial sites, service building area besides avenue plantation along roads. In FY 2020-21, around 5.0 Ha has been planted in Dabor Colliery with local species (neem, sesam, etc.) having good survival rate.
- Water spraying along the haul roads, coal transport route and railway siding to limit the dust.

2.0 WATER POLLUTION CONTROL MEASURES:

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

- Protection walls and earth filling in abandoned pits are carried out in Bonjemehari colliery.
- Soak pits and septic tanks have been provided in the colonies to treat the domestic effluent.
- Mine effluent water and groundwater monitoring is being carried out regularly.

3.0 NOISE POLLUTION CONTROL MEASURES:

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

PART – H

ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION.

The following are the additional investment proposals for environmental protection:

- The Environmental monitoring of the project will be continued fortnightly/quarterly as per the guidelines of Ministry of Environment, Forest & Climate Change (MOEF&CC).
- Necessary Consent for discharge may be taken from Competent Authority, if required.
- Solar lighting has been provided at Magazine House and Weigh Bridge in Dabor and Bonjemehari colliery.
- Health camps, borewells, etc. has been carried out under CSR activities.

PART – I

ANY OTHER PARTICULAR IN RESPECT OF ENVIRONMENTAL PROTECTION AND ABATEMENT 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 No.	Station Name	Month	Fortnight	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
3A1	Agent office Banjemhari Colliery	April	First	14-May-20	129.9	38.7	<10.0	17.8
3A1	Agent office Banjemhari Colliery	May	Second	20-May-20	121.6	40.7	<10.0	15.9
3A1	Agent office Banjemhari Colliery	June	Second	23-Jun-20	80.4	29.5	<10.0	18.2
3A1	Agent office Banjemhari Colliery	July	First	07-Jul-20	130.6	39.8	<10.0	17.1
3A1	Agent office Banjemhari Colliery	August	First	12-Aug-20	132.7	32.6	<10.0	15.5
3A1	Agent office Banjemhari Colliery	August	Second	24-Aug-20	147.8	34.9	<10.0	15.7
3A1	Agent office Banjemhari Colliery	September	First	03-Sep-20	160.4	41.9	<10.0	16.3
3A1	Agent office Banjemhari Colliery	September	Second	22-Sep-20	160.9	42.5	<10.0	17.2
3A1	Agent Office, Bojjemehari Colliery	October	First	06-Oct-20	195.2	50.3	<10.0	18
3A1	Agent Office, Bojjemehari Colliery	October	Second	27-Oct-20	274.1	59.8	<10.0	18.5
3A1	Agent Office, Bojjemehari Colliery	November	First	04-Nov-20	296.2	18.7	<10.0	19.3
3A1	Agent Office, Bojjemehari Colliery	November	Second	18-Nov-20	377.4	87.1	<10.0	19.4
3A1	Agent Office, Bojjemehari Colliery	December	First	01-Dec-20	288.4	61	<10.0	19.2
3A1	Agent Office, Bojjemehari Colliery	December	Second	18-Dec-20	292.2	82	<10.0	19.4
3A1	Agent Office, Bojjemehari Colliery	January	First	11-Jan-21	296.7	119	<10.0	19.2
3A1	Agent Office, Bojjemehari Colliery	January	Second	27-Jan-21	270.8	115	<10.0	19
3A1	Agent Office, Bojjemehari Colliery	February	First	15-Feb-21	202.2	76	<10.0	19.1
3A1	Agent Office, Bojjemehari Colliery	February	Second	16-Feb-21	213.9	40	<10.0	19.3
3A1	Agent Office, Bojjemehari Colliery	March	First	15-Mar-21	244	40	<10.0	19.4
3A1	Agent Office, Bojjemehari Colliery	March	Second	16-Mar-21	285.6	54	<10.0	19.2
3A2	Melekola village	October	First	06-Oct-20	86.8	27.4	<10.0	14.2
3A2	Melekola village	October	Second	27-Oct-20	87.5	27.8	<10.0	14.4
3A2	Melekola village	November	First	04-Nov-20	90.4	29.2	<10.0	14.8
3A2	Melekola village	November	Second	18-Nov-20	90.8	30.1	<10.0	14.6
3A2	Melekola village	December	First	01-Dec-20	93.5	31.7	<10.0	14.8
3A2	Melekola village	December	Second	18-Dec-20	94.2	32.4	<10.0	14.9
3A2	Melekola village	January	First	11-Jan-21	95.6	33.8	<10.0	15.2
3A2	Melekola village	January	Second	27-Jan-21	95.9	34.4	<10.0	15.3
3A2	Melekola village	February	First	01-Feb-21	96.4	32.5	<10.0	15.6
3A2	Melekola village	February	Second	16-Feb-21	96.8	33.5	<10.0	15.8
3A2	Melekola village	March	First	15-Mar-21	87.1	33.4	<10.0	16.1
3A2	Melekola village	March	Second	16-Mar-21	97.6	34.2	<10.0	16.2
3A3	Fulberia village	October	First	06-Oct-20	91.4	33.1	<10.0	15.3
3A3	Fulberia village	October	Second	27-Oct-20	92.6	33.5	<10.0	15.6
3A3	Fulberia village	November	First	04-Nov-20	94.5	35	<10.0	15.7
3A3	Fulberia village	November	Second	18-Nov-20	95.2	35.4	<10.0	15.5
3A3	Fulberia village	December	First	01-Dec-20	97.2	36.3	<10.0	15.7
3A3	Fulberia village	December	Second	18-Dec-20	98	37.4	<10.0	15.6
3A3	Fulberia village	January	First	11-Jan-21	99.2	38.2	<10.0	15.8
3A3	Fulberia village	January	Second	27-Jan-21	99.4	38.7	<10.0	15.7
3A3	Fulberia village	February	First	01-Feb-21	99.5	37.4	<10.0	16
3A3	Fulberia village	February	Second	16-Feb-21	99.7	37.4	<10.0	16.3
3A3	Fulberia village	March	First	15-Mar-21	99.8	37.6	<10.0	16.4
3A3	Fulberia village	March	Second	16-Mar-21	99.3	36.8	<10.0	16.5
3A4	Salanpur Area office	October	First	06-Oct-20	92.5	34.6	<10.0	15.4
3A4	Salanpur Area office	October	Second	27-Oct-20	92.9	35	<10.0	15.5
3A4	Salanpur Area office	November	First	04-Nov-20	95.2	35.4	<10.0	15.6
3A4	Salanpur Area office	November	Second	25-Nov-20	95.6	35.8	<10.0	15.6
3A4	Salanpur Area office	December	First	01-Dec-20	96.3	36.5	<10.0	15.9

Environmental Statement (Form-V) Cluster No. – 3 (Group of Mines) 2020-21

Station No.	Station Name	Month	Fortnight	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
3A4	Salanpur Area office	December	Second	30-Dec-20	405.2	131	<10.0	16.1
3A4	Salanpur Area office	January	First	13-Jan-21	730.4	59.1	<10.0	16.3
3A4	Salanpur Area office	January	Second	27-Jan-21	97.6	36.2	<10.0	16.4
3A4	Salanpur Area office	February	First	11-Feb-21	327	55	<10.0	16.6
3A4	Salanpur Area office	February	Second	16-Feb-21	98.5	37	<10.0	16.8
3A4	Salanpur Area office	March	First	15-Mar-21	99.2	34.5	<10.0	17
3A4	Salanpur Area office	March	Second	16-Mar-21	99	34.2	<10.0	17.2
3A5	Dispensary of Dabor Colliery	May	First	12-May-20	93.5	42.9	<10.0	15.6
3A5	Dispensary of Dabor Colliery	May	Second	20-May-20	95.8	43.6	<10.0	15.7
3A5	Dispensary of Dabor Colliery	June	Second	22-Jun-20	93.8	42.5	<10.0	15.2
3A5	Dispensary of Dabor Colliery	July	First	07-Jul-20	88.7	37.6	<10.0	14.8
3A5	Dispensary of Dabor Colliery	August	First	03-Aug-20	88.4	34.6	<10.0	14.6
3A5	Dispensary of Dabor Colliery	August	Second	24-Aug-20	89.6	35.2	<10.0	14.7
3A5	Dispensary of Dabor Colliery	September	First	03-Sep-20	89.6	35.2	<10.0	14.4
3A5	Dispensary of Dabor Colliery	September	Second	22-Sep-20	90.3	36.4	<10.0	14.6
3A6	Achra J I High School	May	First	12-May-20	92.8	40.8	<10.0	14.8
3A6	Achra J I High School	May	Second	21-May-20	93.6	41.2	<10.0	14.9
3A6	Achra J I High School	June	Second	22-Jun-20	90.7	40.5	<10.0	14.3
3A6	Achra J I High School	July	First	07-Jul-20	86.3	35.2	<10.0	14.1
3A6	Achra J I High School	August	First	03-Aug-20	85.2	33.7	<10.0	14
3A6	Achra J I High School	August	Second	24-Aug-20	86.4	34.4	<10.0	14.1
3A6	Achra J I High School	September	First	03-Sep-20	85.7	34.2	<10.0	14.2
3A6	Achra J I High School	September	Second	22-Sep-20	86.2	34.5	<10.0	14.3
3A7	Manager Office, Dabor Colliery	May	First	12-May-20	126.4	42.7	<10.0	15.2
3A7	Manager Office, Dabor Colliery	May	Second	21-May-20	124.8	44.9	<10.0	15.8
3A7	Manager Office, Dabor Colliery	June	Second	22-Jun-20	119.3	42.7	<10.0	15.2
3A7	Manager Office, Dabor Colliery	July	First	07-Jul-20	104.5	34.8	<10.0	14.3
3A7	Manager Office, Dabor Colliery	August	First	03-Aug-20	104.3	34.5	<10.0	13.9
3A7	Manager Office, Dabor Colliery	August	Second	24-Aug-20	107.3	35.2	<10.0	14
3A7	Manager Office, Dabor Colliery	September	First	03-Sep-20	106.3	35.7	<10.0	14.1
3A7	Manager Office, Dabor Colliery	September	Second	22-Sep-20	107.9	36.2	<10.0	14.5
3A8	Banjemehari workshop near Railway siding	May	First	14-May-20	281.2	51.6	<10.0	19.4
3A8	Banjemehari workshop near Railway siding	May	Second	18-May-20	329.4	55.6	<10.0	18.7
3A8	Banjemehari workshop near Railway siding	June	Second	22-Jun-20	64.7	28.5	<10.0	17.4
3A8	Banjemehari workshop near Railway siding	July	First	07-Jul-20	104.8	43.5	<10.0	16.2
3A8	Banjemehari workshop near Railway siding	August	First	03-Aug-20	221.5	57.3	<10.0	17.9
3A8	Banjemehari workshop near Railway siding	August	Second	24-Aug-20	66.5	24.7	<10.0	15.1
3A8	Banjemehari workshop near Railway siding	September	First	03-Sep-20	131.6	36.2	<10.0	15.7
3A8	Banjemehari workshop near Railway siding	September	Second	24-Sep-20	124.3	34.8	<10.0	15.7
3A8	Banjemehari workshop near Railway siding	October	First	06-Oct-20	63.3	16.6	<10.0	14.3
3A8	Banjemehari workshop near Railway siding	October	Second	27-Oct-20	14.9	38.3	<10.0	17.4
3A8	Banjemehari workshop near	November	First	04-Nov-20	288.8	11.6	<10.0	18

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Station No.	Station Name	Month	Fortnight	Date of Sampling	PM ₁₀	PM _{2.5}	SO ₂	NO _x
	Railway siding							
3A8	Bonjemehari workshop near Railway siding	November	Second	17-Nov-20	298.4	96.7	<10.0	18.3
3A8	Bonjemehari workshop near Railway siding	December	First	01-Dec-20	252.6	59	<10.0	18.5
3A8	Bonjemehari workshop near Railway siding	December	Second	30-Dec-20	256.4	57.4	<10.0	18.7
3A8	Bonjemehari workshop near Railway siding	January	First	11-Jan-21	374.5	33.1	<10.0	18.9
3A8	Bonjemehari workshop near Railway siding	January	Second	27-Jan-21	279.2	55	<10.0	18.6
3A8	Bonjemehari workshop near Railway siding	February	First	15-Feb-21	437.6	17	<10.0	18.9
3A8	Bonjemehari workshop near Railway siding	February	Second	16-Feb-21	421.1	60	<10.0	19.2
3A8	Bonjemehari workshop near Railway siding	March	First	15-Mar-21	446.6	55	<10.0	19.3
3A8	Bonjemehari workshop near Railway siding	March	Second	16-Mar-21	604.6	57	<10.0	21.6

Analysis of Heavy Metals in Air

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
3A1	Agent office, Bonjemehari colliery	3-Sep-20	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
3A5	Dispensary of Dabor colliery	3-Sep-20	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
3A6	Achra J I high school	3-Sep-20	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
3A7	Managers' office of Dabar colliery	3-Sep-20	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
3A8	Bonjemehari workshop near railway siding	3-Sep-20	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
3A1	Agent office, Bonjemehari colliery	15-Mar-21	BDL	BDL	BDL	BDL	BDL	BDL
3A2	Melekola village	15-Mar-21	BDL	BDL	BDL	BDL	BDL	BDL
3A3	Fulberia village	15-Mar-21	BDL	BDL	BDL	BDL	BDL	BDL
3A4	Salanpur area office	15-Mar-21	BDL	BDL	BDL	BDL	BDL	BDL
3A8	Bonjemehari workshop near railway siding	15-Mar-21	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 No.	Station Name	Month	Fortnight	Date of Sampling	Noise Level dB(A)
3N1	Workshop Bonjemehari OC Mine	May	First	14-May-20	64.2
3N1	Workshop Bonjemehari OC Mine	September	First	16-Sep-20	55.6
3N1	Workshop Bonjemehari OC Mine	November	First	04-Nov-20	56.4
3N1	Workshop Bonjemehari OC Mine	December	First	15-Dec-20	52.6
3N1	Workshop Bonjemehari OC Mine	March	First	04-Jan-21	60.83
3N2	Workshop Sangramgarh Extension – OC Mine	May	First	14-May-20	64.6
3N2	Workshop Sangramgarh Extension – OC Mine	September	First	16-Sep-20	56.7
3N2	Workshop Sangramgarh Extension – OC Mine	November	First	04-Nov-20	58.7
3N2	Workshop Sangramgarh Extension – OC Mine	December	First	15-Dec-20	57.2
3N2	Workshop Sangramgarh Extension – OC Mine	March	First	04-Jan-21	81.9

Annexure – III**Effluent Water Quality for 5 parameters**

Station No.	Station Name	Month	Fortnight	Date of Sampling	pH	TSS	TDS	O&G	COD
3MW1	Bonjemehari OC Mine	May	First	14-May-20	8	32	742	<2.0	24
3MW1	Bonjemehari OC Mine	May	Second	20-May-20	7.5	30	764	<2.0	20
3MW1	Bonjemehari OC Mine	June	First	04-Jun-20	8.1	32	740	<2.0	24
3MW1	Bonjemehari OC Mine	June	Second	24-Jun-20	7.6	34	788	<2.0	20
3MW1	Bonjemehari OC Mine	July	First	09-Jul-20	8	32	748	<2.0	24
3MW1	Bonjemehari OC Mine	July	Second	27-Jul-20	7.5	32	740	<2.0	24
3MW1	Bonjemehari OC Mine	August	First	03-Aug-20	8	32	756	<2.0	24
3MW1	Bonjemehari OC Mine	August	Second	24-Aug-20	8	30	738	<2.0	20
3MW1	Bonjemehari OC Mine	September	Second	23-Sep-20	7.8	32	752	<2.0	20
3MW1	Bonjemehari OC Mine	October	First	06-Oct-20	8	29	770	<2.0	20
3MW1	Bonjemehari OC Mine	October	First	06-Oct-20	8	29	770	<2.0	20
3MW1	Bonjemehari OC Mine	October	Second	27-Oct-20	7.9	33	778	<2.0	20
3MW1	Bonjemehari OC Mine	October	Second	27-Oct-20	7.9	33	778	<2.0	20
3MW1	Bonjemehari OC Mine	November	First	02-Nov-20	8	28	796	<2.0	32
3MW1	Bonjemehari OC Mine	November	Second	17-Nov-20	7.7	25	766	<2.0	16
3MW1	Bonjemehari OC Mine	December	First	05-Dec-20	7.7	21	748	<2.0	28
3MW1	Bonjemehari OC Mine	December	Second	28-Dec-20	7.3	22	752	<2.0	28
3MW1	Bonjemehari OC Mine	January	First	12-Jan-21	7.2	21	718	<2.0	24
3MW1	Bonjemehari OC Mine	January	Second	23-Jan-21	7.5	18	737	<2.0	28
3MW1	Bonjemehari OC Mine	February	First	03-Feb-21	7.4	21	729	<2.0	24
3MW1	Bonjemehari OC Mine	February	Second	24-Feb-21	7.5	19	785	<2.0	28
3MW1	Bonjemehari OC Mine	March	First	03-Mar-21	7.4	22	752	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	May	First	14-May-20	8.1	26	218	<2.0	20
3MW2	Sangramgarh Extension – OC Mine	May	Second	20-May-20	8	24	288	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	June	First	04-Jun-20	8	20	232	<2.0	28
3MW2	Sangramgarh Extension – OC Mine	June	Second	24-Jun-20	8	28	246	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	July	First	09-Jul-20	8	26	232	<2.0	32
3MW2	Sangramgarh Extension – OC Mine	July	Second	27-Jul-20	7.8	26	222	<2.0	20
3MW2	Sangramgarh Extension – OC Mine	August	First	03-Aug-20	7.9	30	220	<2.0	28
3MW2	Sangramgarh Extension – OC Mine	August	Second	24-Aug-20	8	28	288	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	September	Second	23-Sep-20	8	24	240	<2.0	16
3MW2	Sangramgarh Extension – OC Mine	October	First	06-Oct-20	7.8	22	248	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	October	First	06-Oct-20	7.8	22	248	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	October	Second	21-Oct-20	8	20	254	<2.0	24
3MW2	Sangramgarh Extension – OC Mine	October	Second	21-Oct-20	8	20	254	<2.0	24
3MW2	Sangramgarh	November	First	02-Nov-20	7.8	16	246	<2.0	12

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Station No.	Station Name	Month	Fortnight	Date of Sampling	pH	TSS	TDS	O&G	COD
	Extension – OC Mine								
3MW2	Sangramgarh Extension – OC Mine	November	Second	17-Nov-20	8	16	224	<2.0	20
3MW2	Sangramgarh Extension – OC Mine	December	First	05-Dec-20	7.1	21	236	<2.0	16
3MW2	Sangramgarh Extension – OC Mine	December	Second	28-Dec-20	7.5	16	230	<2.0	20
3MW2	Sangramgarh Extension – OC Mine	January	First	12-Jan-21	7.7	17	226	<2.0	16
3MW2	Sangramgarh Extension – OC Mine	January	Second	23-Jan-21	7.2	16	243	<2.0	28
3MW2	Sangramgarh Extension – OC Mine	February	First	03-Feb-21	7.3	16	267	<2.0	28
3MW2	Sangramgarh Extension – OC Mine	February	Second	24-Feb-21	7.6	17	263	<2.0	44
3MW2	Sangramgarh Extension – OC Mine	March	First	03-Mar-21	7.6	19	248	<2.0	24
3MW3	Dalmia OC	May	First	14-May-20	8.6	26	276	<2.0	24
3MW3	Dalmia OC	May	Second	19-May-20	8.6	26	276	<2.0	24
3MW3	Dalmia OC	June	First	04-Jun-20	8.4	25	262	<2.0	24
3MW3	Dalmia OC	June	Second	22-Jun-20	8.2	27	246	<2.0	16
3MW3	Dalmia OC	July	First	07-Jul-20	8.4	24	234	<2.0	20
3MW3	Dalmia OC	July	Second	30-Jul-20	8.5	23	260	<2.0	24
3MW3	Dalmia OC	August	First	04-Aug-20	8.2	23	288	<2.0	20
3MW3	Dalmia OC	August	Second	25-Aug-20	8.7	22	262	<2.0	16
3MW3	Dalmia OC	September	Second	29-Sep-20	8.5	23	222	<2.0	24
3MW3	Dalmia OC	October	First	07-Oct-20	8.5	27	248	<2.0	28
3MW3	Dalmia OC	October	First	07-Oct-20	8.5	27	248	<2.0	28
3MW3	Dalmia OC	October	Second	16-Oct-20	8.3	25	256	<2.0	28
3MW3	Dalmia OC	October	Second	16-Oct-20	8.3	25	256	<2.0	28
3MW3	Dalmia OC	November	First	02-Nov-20	7.8	22	278	<2.0	20
3MW3	Dalmia OC	November	Second	17-Nov-20	7.8	20	238	<2.0	36
3MW3	Dalmia OC	December	First	05-Dec-20	7.6	20	228	<2.0	24
3MW3	Dalmia OC	December	Second	28-Dec-20	7.5	19	220	<2.0	32
3MW3	Dalmia OC	January	First	12-Jan-21	8	20	255	<2.0	20
3MW3	Dalmia OC	January	Second	23-Jan-21	7.2	18	225	<2.0	24
3MW3	Dalmia OC	February	First	03-Feb-21	7.4	18	258	<2.0	16
3MW3	Dalmia OC	February	Second	24-Feb-21	8.1	18	256	<2.0	40
3MW3	Dalmia OC	March	First	03-Mar-21	7.9	18	286	<2.0	32
3MW4	Muktaichandi OC	May	First	14-May-20	7.7	28	386	<2.0	28
3MW4	Muktaichandi OC	May	Second	21-May-20	8.1	26	344	<2.0	28
3MW4	Muktaichandi OC	June	First	04-Jun-20	7.6	22	342	<2.0	28
3MW4	Muktaichandi OC	June	Second	24-Jun-20	8	24	318	<2.0	28
3MW4	Muktaichandi OC	July	First	07-Jul-20	7.6	26	392	<2.0	28
3MW4	Muktaichandi OC	July	Second	27-Jul-20	8	28	362	<2.0	16
3MW4	Muktaichandi OC	August	First	04-Aug-20	7.4	28	364	<2.0	20
3MW4	Muktaichandi OC	August	Second	25-Aug-20	7.5	30	324	<2.0	20
3MW4	Muktaichandi OC	September	Second	24-Sep-20	7.5	30	312	<2.0	20
3MW4	Muktaichandi OC	October	First	06-Oct-20	7.6	28	362	<2.0	16
3MW4	Muktaichandi OC	October	First	06-Oct-20	7.6	28	362	<2.0	16
3MW4	Muktaichandi OC	October	Second	21-Oct-20	7.5	31	370	<2.0	16

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Station No.	Station Name	Month	Fortnight	Date of Sampling	pH	TSS	TDS	O&G	COD
3MW4	Muktaichandi OC	October	Second	21-Oct-20	7.5	31	370	<2.0	16
3MW4	Muktaichandi OC	November	First	02-Nov-20	7.5	27	382	<2.0	36
3MW4	Muktaichandi OC	November	Second	17-Nov-20	7.4	25	330	<2.0	12
3MW4	Muktaichandi OC	December	First	05-Dec-20	7.2	22	318	<2.0	32
3MW4	Muktaichandi OC	December	Second	28-Dec-20	7.3	20	322	<2.0	32
3MW4	Muktaichandi OC	January	First	12-Jan-21	7.6	21	343	<2.0	28
3MW4	Muktaichandi OC	January	Second	23-Jan-21	7.4	22	378	<2.0	32
3MW4	Muktaichandi OC	February	First	03-Feb-21	7.4	19	388	<2.0	28
3MW4	Muktaichandi OC	February	Second	24-Feb-21	7.4	22	329	<2.0	32
3MW4	Muktaichandi OC	March	First	03-Mar-21	7.3	21	361	<2.0	28

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

Effluent Water Quality for full parameters (29 parameters)

Sl. No.	Parameters	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	3-Sep-20	3-Sep-20	5-Sep-20	4-Sep-20	18-Mar-21	18-Mar-21	18-Mar-21	18-Mar-21			
1	Colour	4	5	4	4	2	4	2	2	Unobjectionable	Platinum Cobalt	1.0
2	Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Physical	-
3	TSS	27	24	24	27	23.4	20.9	16.1	22.6	100	Gravimetric	10
4	pH	8.03	7.86	8.75	7.51	7.65	7.30	8.48	7.27	5.5-9.0	Electrometric	0.01
5	Temperature (°C)	29.3	29.1	29.4	29.2	27.5	27.5	27.5	27.5	Shall not exceed 5 °C above the receiving water temperature	Thermometric	0.1
6	Oil & Grease	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	10	Partition Gravimetric	2.0
7	Total Residual Chlorine	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	Colorimetric	0.02
8	Ammonical Nitrogen	0.72	0.74	0.75	0.72	0.58	0.68	0.72	0.54	50	Nesslerization	0.01
9	Total Kjeldahi Nitrogen	1.46	1.82	1.84	1.24	1.52	1.72	1.69	1.62	100	Macro Kjeldahl	1.0
10	Free Ammonia	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	5.0	Spectrophotometric	0.02
11	BOD	12	10	10	12	10.0	9.0	8.0	5.5	30	Bioassay	2.0
12	COD	28	20	20	24	20	28	36	24	250	Closed Reflux	4.0
13	Arsenic	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.2	AAS-VGA	0.002
14	Lead	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	AAS-GTA	0.005

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Sl. No.	Parameters	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	Analytical Results	General Standards for Discharge of Effluent (Schedule VI)	Method of Detection	Detection Limit
	Date of Sampling	3-Sep-20	3-Sep-20	5-Sep-20	4-Sep-20	18-Mar-21	18-Mar-21	18-Mar-21	18-Mar-21			
15	Hexavalent Chromium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.1	Colorimetric	0.01
16	Total Chromium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	AAS-Flame	0.04
17	Copper	0.03	0.03	0.04	0.04	BDL	BDL	BDL	BDL	3.0	AAS-Flame	0.03
18	Zinc	0.03	0.04	0.01	0.03	BDL	BDL	BDL	BDL	5.0	AAS-Flame	0.01
19	Selenium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	0.05	AAS-GTA	0.002
20	Nickel	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	3.0	AAS-Flame	0.01
21	Fluoride	0.30	0.38	0.62	0.46	0.28	0.44	0.64	0.42	2.0	SPADNS	0.02
22	Dissolved Phosphate	1.74	1.90	1.58	1.74	1.84	1.96	1.78	1.73	5.0	Molybdovanadate	0.30
23	Sulphide	0.008	0.005	0.006	0.007	0.010	0.006	0.009	0.008	2.0	Methylene Blue	0.005
24	Phenolics	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	1.0	Chloroform Extraction	0.001
25	Manganese	0.20	0.18	BDL	0.16	BDL	BDL	BDL	BDL	2.0	AAS-Flame	0.02
26	Iron	0.10	0.10	BDL	0.09	BDL	BDL	BDL	BDL	3.0	AAS-Flame	0.06
27	Nitrate Nitrogen	4.2	3.4	3.2	3.6	3.6	4.4	3.6	4.2	10	Spectrophotometric	0.5
28	Cadmium	BDL	BDL	BDL	BDL	BDL	BDL	BDL	BDL	2.0	AAS-GTA	0.0005
29	Total Dissolved Solids	738	274	238	352	754	236	240	355	Not Specified	Gravimetric	25.0

Note: All parameters in mg/l unless otherwise specified

Annexure – III**Groundwater Quality**

Sl. No.	Parameters	Analytical Results		Indian Standard Drinking Water (IS-10500 :2012)		Method of detection	Detection Limit
	Sample code	3GW1	3GW3	Acceptable Limit	Permissible Limit		
	Sampling Date	23-May-20	23-May-20				
1	Colour, Hazen	3	4	5.0	15.0	Platinum Cobalt	1.0 Hazen
2	Odour	Unobjectionable	Unobjectionable	Unobjectionable		Physical	-
3	Taste	Agreeable	Agreeable	Agreeable		Physical	-
4	Turbidity, NTU	1	2	1	5	Nephelometric	1.0 NTU
5	pH	7.09	7.21	6.5-8.5	No relaxation	Electrometric	0.01
6	Total Hardness	213	209	300	600	EDTA	4.0
7	Iron	BDL	0.06	0.3	No relaxation	AAS Flame	0.06
8	Chlorides	106	57	250	1000	Argentometric	2.0
9	Res Free Chlorine	0.02	0.04	0.2	1	Spectrophotometric	0.02
10	Dissolved Solids	548	412	500	2000	Gravimetric	10.0
11	Calcium	75	71	75	200	EDTA	1.60
12	Copper	BDL	BDL	0.05	1.5	AAS Flame	0.03
13	Manganese	BDL	BDL	0.1	0.3	AAS Flame	0.02
14	Sulphate	48	128	200	400	Turbidity	2.0
15	Nitrate	21.64	23.46	45	No relaxation	Spectrophotometric	0.5
16	Fluoride	0.64	0.78	1	1.5	SPANDS	0.02
17	Selenium	BDL	BDL	0.01	No relaxation	AAS - GTA	0.002
18	Arsenic	BDL	BDL	0.01	0.05	AAS - VGA	0.002
19	Lead	BDL	BDL	0.01	No relaxation	AAS - GTA	0.005
20	Zinc	0.03	0.03	5	15	AAS Flame	0.01
21	Hex Chromium	BDL	BDL	0.05	0.05	Colorimetric	0.01
22	Boron	BDL	BDL	0.5	1	Colorimetric Carmine	0.20
23	Coliforms (MPN)	NIL	NIL	Not Specified		Chloroform Extraction	1.0
24	Phenolics	BDL	BDL	0.001	0.002	Titrimetric Indicator	0.001
25	Alkalinity	144	112	200	600	Titrimetric	4.0
26	Cadmium	BDL	BDL	0.003	No relaxation	AAS - GTA	0.0005

Note: All units in mg/l unless otherwise specified

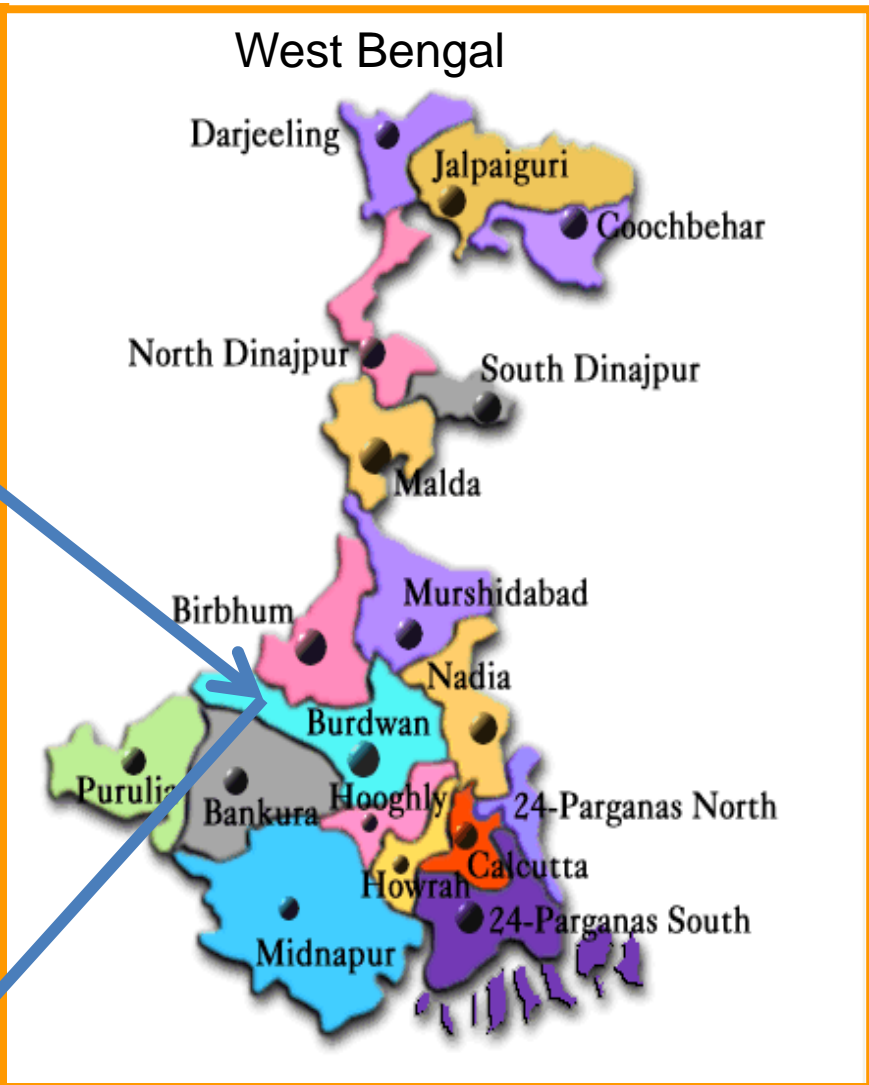
Annexure – IV**Groundwater Level**

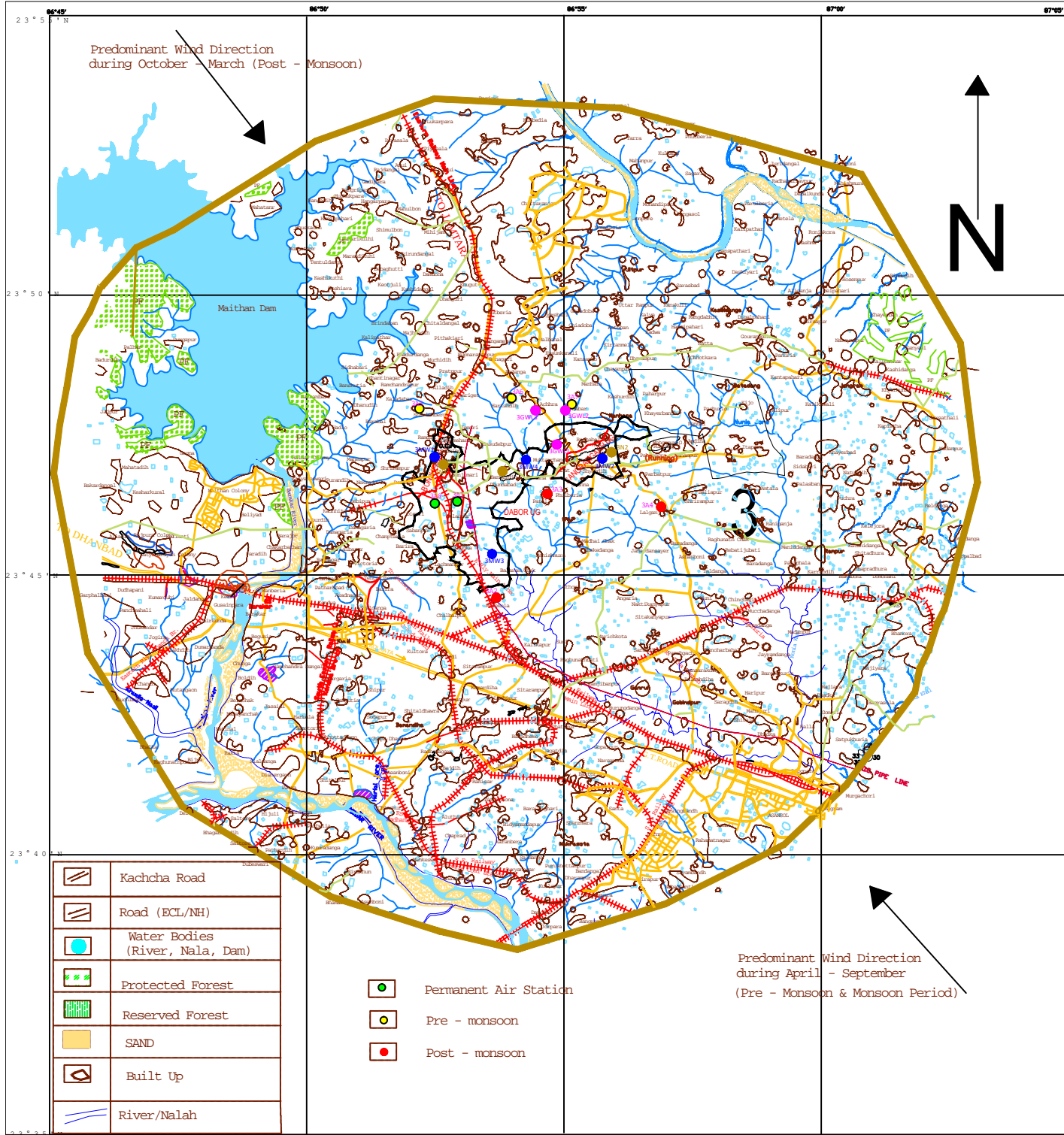
Sl.	Station Code	Location of Dugwell	Date of measurement	Water level (in Meters) Below Ground Level
1	3GW1	Dugwell near Sangramgarh office	23-May-20	6.75
2	3GW3	Dugwell at Roidaspara, Achra village	23-May-20	10.1
1	3GWL1	Dugwell near Sangramgarh office	24-Aug-20	1.23
2	3GWL2	Dugwell at house of Mr.Parimal Mahato at Dabor village	24-Aug-20	4.1
3	3GWL3	Dugwell at Roidaspara, Achra village	24-Aug-20	1.23
1	3GWL1	Dugwell near Sangramgarh office	21-Nov-20	3.5
2	3GWL2	Dugwell at house of Mr.Parimal Mahato at Dabor village	21-Nov-20	8.5
3	3GWL3	Dugwell at Roidaspara, Achra village	21-Nov-20	7.5
1	3GWL1	Dugwell near Sangramgarh office	22-Jan-21	6.25
2	3GWL2	Dugwell at house of Mr.Parimal Mahato at Dabor village	22-Jan-21	9.25
3	3GWL3	Dugwell at Roidaspara, Achra village	22-Jan-21	8.35

Piezometer water level

Sl. No.	Station Code	Location of Piezometer	Date of measurement	Water level (in Meters) Below Ground Level
1	3/SL/BP-01	Salanpur (Bonjemehari OCP)	23-May-20	83.30
1	3/SL/BP-01	Salanpur (Bonjemehari OCP)	12-Aug-20	84.80
1	3/SL/BP-01	Salanpur (Bonjemehari OCP)	21-Nov-20	86.50
1	3/SL/BP-01	Salanpur (Bonjemehari OCP)	22-Jan-21	88.75

Plate – 1 Location of Cluster 3





AIR QUALITY MONITORING STATIONS

Station Code	Type of Station	Name of Station
● 3A1	Permanent Air Station	AGENT OFFICE, BONJEMEhari COLLIERY
● 3A2	Post monsoon Air Station	MELEKOLA SEVASHRAM SANGHA (BIMALANANDA PARAMHANS), MELEKOLA VILLAGE
● 3A3	Post monsoon Air Station	FULBERIA VILLAGE
● 3A4	Post monsoon Air Station	SALANPUR AREA OFFICE
● 3A5	Pre monsoon Air Station	DISPENSARY OF DABOR COLLIERY
● 3A6	Pre monsoon Air Station	ACHRA J I HIGH SCHOOL
● 3A7	Pre monsoon Air Station	MANAGER OFFICE DABOR COLLIERY
● 3A8	Permanent Air Station	BONJEMEhari WORKSHOP NEAR RAILWAY SIDING

NOISE SAMPLING STATIONS

Station Code	Name of Station (Workplace)
● 3N1	Bonjemehari OC Mines
● 3N3	Dabor OC

MINE/ EFFLUENT WATER STATIONS

Station Code	Mine/Effluent Water Station
● 3MW1	Bonjemehari OC Mine
● 3MW2	Sangramgarh Extension - OC Mine
● 3MW3	Dalmia OC
● 3MW4	Muktaichandi OC

GROUND WATER LEVEL

Station Code	Location of Dug Well
● 3GWL1	Dugwell near Sangramgarh Office
● 3GWL2	Dugwell at house of Mr. Parimal Mahato at Dabor village
● 3GWL3	Dugwell at backside of staff room, Achra High School

	Kachcha Road
	Road (ECL/NH)
	Water Bodies (River, Nala, Dam)
	Protected Forest
	Reserved Forest
	SAND
	Built Up
	River/Nalah

	Permanent Air Station
	Pre - monsoon
	Post - monsoon

2 KMS

EASTERN COALFIELDS LIMITED	JOB NO 111726
ENVIRONMENTAL STATEMENT FOR CLUSTER NO. 3	
Location of Sampling Stations OF CLUSTER NO. 3	
 ISO 9001 Company	Sheet 1 OF 1 REV. No. 0