ENVIRONMENTAL STATEMENT
IN
FORM-V

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

(2018-2019)

FOR
MOHANPUR OPENCAST PROJECT
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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CMPDI

ISO 9001:2015 Company

ENVIRONMENTAL STATEMENT FORM – V

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

MOHANPUR OPENCAST PROJECT

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 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, the work of Environmental Statement in Form – V for Mohanpur Opencast Project was entrusted to CMPDI by GM (Environment and Forest), Eastern Coalfields Limited.

1.2 PROJECT DESCRIPTION:

Mohanpur OCP (1.0 MTY) has been approved by ECL board for Partial Outsourcing Option in June' 2008. The OCP is under Salanpur Area of ECL.

To facilitate the space for in-pit dumping the total mining area has been divided into two quarries, i.e., Quarry-1 and Quarry-2. Quarry-1, with mineable reserves of 5.69 Mt within the existing leasehold will be worked first. Quarry-2 with mineable reserves of 4.99 Mt beyond the leasehold will be worked after completion of Quarry-1. In the Quarry-1, the base of the mine has been fixed at the floor of Salanpur-A seam as Salanpur-Special seam is not developed/workable in this part. In Quarry-2 the mine-floor has been envisaged at the floor of Salanpur-Special seam. Mine parameter for the approved OCP is given below (as per PR prepared and approved in 2008):

S.N.	Description	Quarry-1	Quarry-2
i	Maximum depth of the OCP	120 m	124 m
ii	Width of the OCP at Surface	980 m	640 m
iii	Width of the OCP at floor (m)	840 m	620 m
iv	Dip-rise length of the OCP along surface	240 m	400 m
v	Dip-rise length of the OCP along floor	200 m	300 m
vi	Mineable Reserves (Mt.)	5.69	4.99
vii	OB Volume (M.Cum)	13.34	13.10
viii	Stripping Ratio (Cum./te)	2.34	2.62

Mohanpur OCP was granted EC vide letter no. J-11015/1128/2007-IA.II(M) dated 10th December, 2009 for production capacity of 1.0 MTY and ML area of 164.91 Ha.

1.2.1 COMMUNICATION:

It is located at a distance of 15 km northwards off G.T. Road from Burnpur road junction of Asansol town in Paschim Bardhaman district and is under administrative control of Salanpur Area of Eastern Coalfields Limited.
The block is at a distance of about 9 km due east of Rupnarayanpur station of Eastern Railway main line (Howrah – New Delhi - Howrah) and about 11 km northwest of Asansol station of the same railway.
The location map of the Mohanpur Opencast Project is given in Plate – I.

1.2.2 SALIENT FEATURES AS PER EMP:

1	Rated capacity per annum	1.00 MTY
2	Total Area	164.91 Ha
3	Forest land required	NIL

1.3 ENVIRONMENTAL SCENARIO:

The Environmental monitoring is carried out quarterly as per guidelines of Ministry of Environment and Forests (MOEF) by CMPDI, RI-I starting from Q/E Jan'2010. Accordingly, ambient air quality is monitored at four stations. The details of the sampling stations are given below:

Area	Project	Station code	Monitoring Station
Salanpur	Mohanpur OCP	15A1	Workshop
Salanpur	Mohanpur OCP	15A2	Agent's Bungalow
Salanpur	Mohanpur OCP	15A3	Salanpur Area Store
Salanpur	Mohanpur OCP	15A4	Bonjemahari Railway Siding

Samples of mine water, drinking water and ground water are collected in each quarter and analysed for quality. Noise level is recorded at four locations earmarked for ambient air sampling. Groundwater level in the project area is monitored by taking measurements at five earmarked dugwells in the month of June, August, November and January every year. The water quality of these wells is analysed once every year.
However, the monitoring schedule has changed from September, 2016.
The environmental monitoring results for year ending 31st March, 2019 are appended as Annexures – I, II, III and IV. The environmental monitoring results for the year 2018-19 can be summarized as given below:

AMBIENT AIR QUALITY

The PM_{10} concentration was found in the range of 29.5 to 101.7 µg/m^3 and was within the limits as per standards. The $PM_{2.5}$ concentration was found in the range of 28.2 to 58.6 µg/m^3 and was within the limits as per NAAQS, 2009. The SO_2 concentration remained below 10.0 µg/m^3 and NO_X concentration was in the range of 12.0 to 24.8 µg/m^3 and was well within the standards.

ENVIRONMENTAL STANDARDS:

Environmental Standards for Ambient Air Quality (AAQ):

Station Category	*Environmental standard for Raniganj Coalfield vide MOEF, Govt. of India, Gazette Notification No. GSR 742 (E) dated 25.09.2000 for 24 hourly samples at 500 meters from dust generating point*			*National Ambient Air Quality Standards (NAAQS), 2009 for industrial, residential and rural areas for 24 hours samples*
	Pollutant Concentration (µg/m^3)			
	PM_{10}	**SO_2**	**NO_x**	**$PM_{2.5}$**
Industrial	300.0	120.0	120.0	60.0
Residential	100.00	80.0	80.0	

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 reveal that most of the parameters are below permissible limits prescribed by Ministry of Environment & Forests (MOEF) as General Standards for Class-'A' effluent (Effluent discharged into inland surface water) and IS-10500 standards for drinking water & groundwater.

Mine water, ground water and Drinking 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 46.8 to 71.3 dB(A). The noise level recorded is below permissible limit prescribed by Ministry of Environment and Forest (MOEF). The monitoring results are given in Annexure – II.

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-9pm)	Night Time (9pm-6am)
Industrial	75.0	70.0
Commercial	65.0	55.0
Residential	55.0	45.0

CHAPTER – II

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

PART – A

SL. NO.	HEADING	PARTICULARS
(I)	NAME AND ADDRESS OF THE PROJECT	Mohanpur OCP; Agent, Mohanpur OCP, Salanpur Area, Amdiha Village, Lalganj, Burdwan – 713359, W.B.
(II)	INDUSTRY CATEGORY	Red
(III)	PRODUCTION CAPACITY	1.0 MTY
	PRODUCTION DURING 2018 – 19	0.78 MTY
(IV)	YEAR OF ESTABLISHMENT	1990
(V)	DATE OF THE LAST ENVIRONMENTAL STATEMENT SUBMITTED	24.09.2018

PART – B

WATER AND RAW MATERIAL CONSUMPTION

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

Mine water

a. Total quantity of mine pumping during 2018 – 19 : 7000 m^3/day
b. Quantity of mine water utilized along with purpose : 880 m^3/day
c. Quantity of mine water discharged outside : 6120 m^3/day
d. Place of discharge : To local nallah through drains after sedimentation

Other water sources

a. Name of source: PHED water
b. Total quantity of water drawn along with purpose during 2018 – 19: 30 m^3/day. The water is used for potable purpose in the residential areas.

Water Consumption (m^3/day)

#	Particulars	2017-18	2018-19
	A. MINING (Dust suppression, Firefighting and Others (service building etc.)	210	210.0
	B. COOLING (in radiators of trucks/HEMM) and workshops	10	10.0
	C. DOMESTIC		
i	Colony (Mine water)	65	65.0
ii	Water supplied to others	30	30.0
	TOTAL	**315.0**	**315.0**

Name of Product	Process water consumption per unit of product output (l/day/te)	
	2017-18	2018-19
Coal	0.22	0.28

(II) RAW MATERIAL CONSUMPTION :

Name of raw material	Name of products	Consumption of raw material (per unit of output)	
		During previous financial year (2017-18)	During current financial year (2018-19)
1. Explosives	Coal	0.92 kg/te	1.06 kg/te
2. Diesel		0.72 l/te	0.29 l/te
3. Lubricants		0.024 l/te	0.01 l/te

PART – C
POLLUTION GENERATED

Pollution	Quantity of pollutants discharged (mass/day)	Concentrations of pollutants discharged (mass/volume)	Percentage variation from prescribed standards with reasons
WATER*	Average concentration of 20.0 mg/l. Mine water discharged is 6120.0 KL/day. Hence, total load is 122.40 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 NAAQS, 2009.
AIR**	Total pollutant load of PM_{10} is 722.32 kg/day while it is 151.69 kg/day for $PM_{2.5}$.		

* Water discharged from the mine contains pollutants in the form of suspended solids (mostly fine coal dust).
**PM_{10} 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)

Hazardous waste	Total quantity		
	During previous financial year (2017-18)	During current financial year (2018-19)	Disposal method
A) From process			Stored in drums, supplied to other units and own use for lubrication. Exchange for new batteries.
i)Used oil (in litres)	3015 litres	2148 litres	
ii)Lead-Acid Batteries			
a. Automobile batteries	11 Nos.	02 Nos.	
b. Cap-lamp batteries	Nil	Nil	
iii) Used Cotton waste (in Kg)	20 kg	50.0 kg	
iv) Metal Scrap (in Kg)	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	Total quantity (In Million Cu.m)	
	During previous financial year (2017-18)	During current financial year (2018-19)
a) From process (Mining) – overburden dump	1.97	1.03
b) From pollution control facilities	-	-
c) Quantity recycled or reutilized (back filled)	0.30	0.096

PART – F

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

Quantity of hazardous wastes generated has been dealt in Part – D of this statement.
Used oils are stored in drums, supplied to other units and own use for lubrication.
HEMM / Automobile batteries are exchanged for new batteries.

PART – G

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

1. 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.
d) Plantation has been carried out over an area of 1.40 Ha in 2018-19 using local species like Sonajuri, neem, etc. in the external dump.
e) Next four year plantation programme is given below:

Sl. No.	Year	Area to be planted (in Ha)
1	2019-20	11.21
2	2020-21	15.0
3	2021-22	9.50
4	2022-23	Nil

2. WATER POLLUTION CONTROL MEASURES:

a) 1 no. of sedimentation tank has been provided. The excess mine water discharge is routed through settling tank before discharge into local nallah.
b) Mine water is regularly filtered using filtration plant.
c) 1 no. of oil and grease trap has been provided in the workshop. The treated water is then discharged into the local nallah.
d) Mine effluent water and groundwater monitoring is being carried out regularly.

1.0 NOISE POLLUTION CONTROL MEASURES:

a) All HEMM & light vehicles are provided with silencers.
b) Noise monitoring is being carried out regularly.
c) Regular maintenance of machine / equipment is done.
d) Green belt is provided in core activity area, along road side in colony and in vacant places.

4.0 LAND RESOURCE MANAGEMENT:

a) Quantity of OB backfilled in year 2017-18 & 2018-19
2017 – 18: 0.30 Mm^3
2018 – 19: 0.096 Mm^3

PART – H

ADDITIONAL INVESTMENT PROPOSAL FOR ENVIRONMENTAL PROTECTION INCLUDING ABATEMENT OF POLLUTION

a) Solar lighting is provided at Weigh Bridge and magazine store.
b) Health camps and other activities like water supply scheme, etc. have been conducted under CSR activities for development of local communities.
c) The Environmental monitoring of the project will be continued fortnightly as per the guidelines of Ministry of Environment and Forest (MOEF).

PART – I

ANY OTHER PARTICULARS FOR IMPROVING THE QUALITY OF THE ENVIRONMENT

The Environmental Monitoring is carried out fortnightly/quarterly for the project by CMPDI, RI-I as per the guideline of Ministry of Environment, Forest & Climate Change (MoEF&CC) 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
Mohanpur OCP	15A1	Workshop	April	First	07-Apr-18	93.5	36.4	<10.0	15.8
Mohanpur OCP	15A1	Workshop	April	Second	25-Apr-18	93.2	36.2	<10.0	15.7
Mohanpur OCP	15A1	Workshop	May	First	04-May-18	94.7	36.9	<10.0	16.1
Mohanpur OCP	15A1	Workshop	May	Second	31-May-18	94.5	36.8	<10.0	16.2
Mohanpur OCP	15A1	Workshop	June	First	06-Jun-18	93	35.6	<10.0	15.7
Mohanpur OCP	15A1	Workshop	June	Second	20-Jun-18	91.3	35.2	<10.0	15.3
Mohanpur OCP	15A1	Workshop	July	First	06-Jul-18	91.2	33.8	<10.0	14.7
Mohanpur OCP	15A1	Workshop	July	Second	16-Jul-18	90.6	32.7	<10.0	14.4
Mohanpur OCP	15A1	Workshop	August	First	13-Aug-18	32.4	33.8	<10.0	14.7
Mohanpur OCP	15A1	Workshop	August	Second	24-Aug-18	87.5	31.6	<10.0	12.7
Mohanpur OCP	15A1	Workshop	September	First	02-Sep-18	86.8	30.8	<10.0	12.4
Mohanpur OCP	15A1	Workshop	September	Second	18-Sep-18	87.3	31.4	<10.0	12.4
Mohanpur OCP	15A1	Workshop	October	First	06-Oct-18	90.4	32.5	<10.0	13.2
Mohanpur OCP	15A1	Workshop	October	Second	29-Oct-18	91.6	33.4	<10.0	13.3
Mohanpur OCP	15A1	Workshop	November	First	05-Nov-18	91.6	32.8	<10.0	13.4
Mohanpur OCP	15A1	Workshop	November	Second	17-Nov-18	94.8	32.7	<10.0	13.3
Mohanpur OCP	15A1	Workshop	December	First	13-Dec-18	92.2	34.9	<10.0	15.7
Mohanpur OCP	15A1	Workshop	December	Second	19-Dec-18	93.1	34.7	<10.0	15.8
Mohanpur OCP	15A1	Workshop	January	First	10-Jan-19	93.4	40.7	<10.0	19.3
Mohanpur OCP	15A1	Workshop	January	Second	28-Jan-19	93.5	42.7	<10.0	19.5
Mohanpur OCP	15A1	Workshop	February	First	07-Feb-19	93.8	42.8	<10.0	20.8
Mohanpur OCP	15A1	Workshop	February	Second	22-Feb-19	93.6	42.7	<10.0	21.3
Mohanpur OCP	15A1	Workshop	March	First	05-Mar-19	96.3	54.7	<10.0	24.8
Mohanpur OCP	15A1	Workshop	March	Second	26-Mar-19	97.1	54.8	<10.0	23.5
Mohanpur OCP	15A2	Agent's Bungalow	April	First	07-Apr-18	84.4	34.8	<10.0	15.2
Mohanpur OCP	15A2	Agent's Bungalow	April	Second	27-Apr-18	85.6	34.6	<10.0	15
Mohanpur OCP	15A2	Agent's Bungalow	May	First	04-May-18	86.3	35	<10.0	15.7
Mohanpur OCP	15A2	Agent's Bungalow	May	Second	31-May-18	86.8	35.2	<10.0	15.8
Mohanpur OCP	15A2	Agent's Bungalow	June	First	06-Jun-18	85.3	34.7	<10.0	15.2
Mohanpur OCP	15A2	Agent's Bungalow	June	Second	19-Jun-18	85.1	34.6	<10.0	15
Mohanpur OCP	15A2	Agent's Bungalow	July	First	06-Jul-18	82.3	31.6	<10.0	14.4
Mohanpur OCP	15A2	Agent's Bungalow	July	Second	16-Jul-18	82.1	31.1	<10.0	14
Mohanpur OCP	15A2	Agent's Bungalow	August	First	13-Aug-18	30.1	31.6	<10.0	14.4
Mohanpur OCP	15A2	Agent's Bungalow	August	Second	24-Aug-18	81.2	29.8	<10.0	13
Mohanpur OCP	15A2	Agent's Bungalow	September	First	02-Sep-18	81	29.5	<10.0	12.8
Mohanpur OCP	15A2	Agent's Bungalow	September	Second	18-Sep-18	81	29.6	<10.0	12.8
Mohanpur OCP	15A2	Agent's Bungalow	October	First	06-Oct-18	84.6	30.7	<10.0	13
Mohanpur OCP	15A2	Agent's Bungalow	October	Second	26-Oct-18	85.9	31.7	<10.0	13.2
Mohanpur OCP	15A2	Agent's Bungalow	November	First	05-Nov-18	85.8	31.3	<10.0	13.2
Mohanpur OCP	15A2	Agent's Bungalow	November	Second	17-Nov-18	86.2	31.4	<10.0	13
Mohanpur OCP	15A2	Agent's Bungalow	December	First	13-Dec-18	87	32.3	<10.0	15.1
Mohanpur OCP	15A2	Agent's Bungalow	December	Second	19-Dec-18	87.7	32.1	<10.0	15.1
Mohanpur OCP	15A2	Agent's Bungalow	January	First	10-Jan-19	88	41.6	<10.0	19.5
Mohanpur OCP	15A2	Agent's Bungalow	January	Second	28-Jan-19	88.2	38.6	<10.0	17.5
Mohanpur OCP	15A2	Agent's Bungalow	February	First	07-Feb-19	88.5	40.7	<10.0	17.8
Mohanpur OCP	15A2	Agent's Bungalow	February	Second	22-Feb-19	88.6	41.8	<10.0	19.4
Mohanpur OCP	15A2	Agent's Bungalow	March	First	05-Mar-19	89.8	42.8	<10.0	18.3
Mohanpur OCP	15A2	Agent's Bungalow	March	Second	26-Mar-19	90	45.2	<10.0	17.6
Mohanpur OCP	15A3	Salanpur Area Store	April	First	07-Apr-18	86.2	34.2	<10.0	15.4
Mohanpur OCP	15A3	Salanpur Area Store	April	Second	25-Apr-18	86.8	34.8	<10.0	15.6
Mohanpur OCP	15A3	Salanpur Area Store	May	First	14-May-18	87.4	35.2	<10.0	16
Mohanpur OCP	15A3	Salanpur Area Store	May	Second	31-May-18	87.6	35.4	<10.0	16.4
Mohanpur OCP	15A3	Salanpur Area Store	June	First	06-Jun-18	86.2	35	<10.0	15.6
Mohanpur OCP	15A3	Salanpur Area Store	June	Second	20-Jun-18	85.8	34.9	<10.0	15.4

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	PM_{10}	$PM_{2.5}$	SO_2	NO_X
Mohanpur OCP	15A3	Salanpur Area Store	July	First	06-Jul-18	82.5	32.7	<10.0	14.2
Mohanpur OCP	15A3	Salanpur Area Store	July	Second	16-Jul-18	81.8	31.6	<10.0	13.8
Mohanpur OCP	15A3	Salanpur Area Store	August	First	13-Aug-18	29.5	32.7	<10.0	14.2
Mohanpur OCP	15A3	Salanpur Area Store	August	Second	24-Aug-18	79.6	28.7	<10.0	12.2
Mohanpur OCP	15A3	Salanpur Area Store	September	First	02-Sep-18	73	28.2	<10.0	12
Mohanpur OCP	15A3	Salanpur Area Store	September	Second	18-Sep-18	78.9	28.4	<10.0	12
Mohanpur OCP	15A3	Salanpur Area Store	October	First	06-Oct-18	81.5	29.5	<10.0	12.5
Mohanpur OCP	15A3	Salanpur Area Store	October	Second	30-Oct-18	82.7	30.3	<10.0	12.9
Mohanpur OCP	15A3	Salanpur Area Store	November	First	05-Nov-18	83.9	30.4	<10.0	12.9
Mohanpur OCP	15A3	Salanpur Area Store	November	Second	17-Nov-18	84.3	30.6	<10.0	13.1
Mohanpur OCP	15A3	Salanpur Area Store	December	First	13-Dec-18	86.1	31.8	<10.0	14.8
Mohanpur OCP	15A3	Salanpur Area Store	December	Second	19-Dec-18	86.5	31.9	<10.0	14.4
Mohanpur OCP	15A3	Salanpur Area Store	January	First	10-Jan-19	87.1	38.7	<10.0	18.7
Mohanpur OCP	15A3	Salanpur Area Store	January	Second	28-Jan-19	87.4	39.6	<10.0	16.8
Mohanpur OCP	15A3	Salanpur Area Store	February	First	07-Feb-19	87.6	39.7	<10.0	19.4
Mohanpur OCP	15A3	Salanpur Area Store	February	Second	22-Feb-19	87.4	39.4	<10.0	16.8
Mohanpur OCP	15A3	Salanpur Area Store	March	First	05-Mar-19	88.4	42.1	<10.0	19.7
Mohanpur OCP	15A3	Salanpur Area Store	March	Second	26-Mar-19	88.6	44.6	<10.0	18.2
Mohanpur OCP	15A4	Bonjemahari Railway Siding	April	First	07-Apr-18	97.7	38.6	<10.0	16.2
Mohanpur OCP	15A4	Bonjemahari Railway Siding	April	Second	25-Apr-18	97.5	38.2	<10.0	16
Mohanpur OCP	15A4	Bonjemahari Railway Siding	May	First	14-May-18	98.1	39.9	<10.0	16.9
Mohanpur OCP	15A4	Bonjemahari Railway Siding	May	Second	31-May-18	98.3	40.6	<10.0	16.6
Mohanpur OCP	15A4	Bonjemahari Railway Siding	June	First	06-Jun-18	96.6	38.4	<10.0	16
Mohanpur OCP	15A4	Bonjemahari Railway Siding	June	Second	20-Jun-18	96	38.1	<10.0	16.1
Mohanpur OCP	15A4	Bonjemahari Railway Siding	July	First	06-Jul-18	92.3	34.4	<10.0	15.2
Mohanpur OCP	15A4	Bonjemahari Railway Siding	July	Second	16-Jul-18	91.7	33.5	<10.0	14.7
Mohanpur OCP	15A4	Bonjemahari Railway Siding	August	First	13-Aug-18	32.7	34.4	<10.0	15.2
Mohanpur OCP	15A4	Bonjemahari Railway Siding	August	Second	24-Aug-18	89.3	31.9	<10.0	13.3
Mohanpur OCP	15A4	Bonjemahari Railway Siding	September	First	02-Sep-18	88.5	31.5	<10.0	13
Mohanpur OCP	15A4	Bonjemahari Railway Siding	September	Second	18-Sep-18	88.9	31.8	<10.0	12.7
Mohanpur OCP	15A4	Bonjemahari Railway Siding	October	First	06-Oct-18	90.2	32.1	<10.0	13.4
Mohanpur OCP	15A4	Bonjemahari Railway Siding	October	Second	30-Oct-18	91.4	32.7	<10.0	13.6
Mohanpur OCP	15A4	Bonjemahari Railway Siding	November	First	05-Nov-18	92.4	32.3	<10.0	13.6
Mohanpur OCP	15A4	Bonjemahari Railway Siding	November	Second	17-Nov-18	82.8	32.5	<10.0	13.5
Mohanpur OCP	15A4	Bonjemahari Railway Siding	December	First	13-Dec-18	93.7	34.2	<10.0	16.1
Mohanpur OCP	15A4	Bonjemahari Railway Siding	December	Second	19-Dec-18	94.2	34.4	<10.0	16.3
Mohanpur OCP	15A4	Bonjemahari Railway Siding	January	First	10-Jan-19	94.5	42.4	<10.0	16.4
Mohanpur OCP	15A4	Bonjemahari Railway Siding	January	Second	28-Jan-19	94.6	41.3	<10.0	18.7
Mohanpur OCP	15A4	Bonjemahari Railway Siding	February	First	07-Feb-19	94.8	36.2	<10.0	18.3
Mohanpur OCP	15A4	Bonjemahari Railway Siding	February	Second	22-Feb-19	94.6	39.3	<10.0	18.5
Mohanpur OCP	15A4	Bonjemahari Railway Siding	March	First	15-Mar-19	98.9	57.1	<10.0	22.6
Mohanpur OCP	15A4	Bonjemahari Railway Siding	March	Second	26-Mar-19	101.7	58.6	<10.0	24.6

Analysis of Heavy Metals in Air

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	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)
Mohanpur OCP	15A1	Workshop	Sept	First	02-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A1	Workshop	Sept	Second	18-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A1	Workshop	March	First	05-Mar-19	<0.005	<0.001	<10.0	<0.001	<0.10	<0.005
	15A2	Agent's Bungalow	Sept	First	02-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A2	Agent's Bungalow	Sept	Second	18-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A2	Agent's Bungalow	March	First	05-Mar-19	<0.005	<0.001	<10.0	<0.001	<0.10	<0.005
	15A3	Salanpur Area Store	Sept	First	02-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A3	Salanpur Area Store	Sept	Second	18-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A3	Salanpur Area Store	March	First	05-Mar-19	<0.005	<0.001	<10.0	<0.001	<0.10	<0.005
	15A4	Bonjemahari Railway Siding	Sept	First	02-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A4	Bonjemahari Railway Siding	Sept	Second	18-Sep-18	<1.0	<0.001	<0.01	<0.001	<0.10	<0.005
	15A4	Bonjemahari Railway Siding	March	First	15-Mar-19	<0.005	<0.001	<10.0	<0.001	<0.10	<0.005

Environmental standards:

National Ambient Air Quality Standards (NAAQS), 2009 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)
Mohanpur OCP	15N4	Bonjemahari Railway Siding	April	First	11-Apr-18	52.1
Mohanpur OCP	15N3	Salanpur Area Store	April	First	11-Apr-18	46.8
Mohanpur OCP	15N2	Agent's Bungalow	April	First	11-Apr-18	52.4
Mohanpur OCP	15N1	Workshop	April	First	11-Apr-18	63.7
Mohanpur OCP	15N1	Workshop	April	Second	25-Apr-18	67.8
Mohanpur OCP	15N2	Agent's Bungalow	April	Second	25-Apr-18	52.4
Mohanpur OCP	15N3	Salanpur Area Store	April	Second	25-Apr-18	61.3
Mohanpur OCP	15N4	Bonjemahari Railway Siding	April	Second	25-Apr-18	60.9
Mohanpur OCP	15N3	Salanpur Area Store	August	First	13-Aug-18	66.4
Mohanpur OCP	15N4	Bonjemahari Railway Siding	August	First	13-Aug-18	60.8
Mohanpur OCP	15N2	Agent's Bungalow	August	First	13-Aug-18	58.7
Mohanpur OCP	15N1	Workshop	August	First	13-Aug-18	67.3
Mohanpur OCP	15N2	Agent's Bungalow	November	First	05-Nov-18	59.7
Mohanpur OCP	15N3	Salanpur Area Store	November	First	05-Nov-18	63.8
Mohanpur OCP	15N4	Bonjemahari Railway Siding	November	First	05-Nov-18	61.8
Mohanpur OCP	15N1	Workshop	November	First	05-Nov-18	69.2
Mohanpur OCP	15N4	Bonjemahari Railway Siding	February	First	07-Feb-19	66.8
Mohanpur OCP	15N1	Workshop	February	First	07-Feb-19	71.3
Mohanpur OCP	15N2	Agent's Bungalow	February	First	07-Feb-19	69.8
Mohanpur OCP	15N3	Salanpur Area Store	February	First	07-Feb-19	62.4

Annexure – III

Effluent Water Quality for 5 parameters

Station No	Station Name	Month	Fortnight	Date of Sampling	pH	TSS	TDS	O&G	COD
15MW1	Mine discharge water from Mohanpur OCP	April	First	07-Apr-18	7.4	20	268	<2.0	24
		April	Second	25-Apr-18	7.5	12	288	<2.0	20
		May	First	15-May-18	7.4	16	224	<2.0	24
		May	Second	31-May-18	7.8	12	236	<2.0	16
		June	First	06-Jun-18	7.8	20	890	<2.0	24
		June	Second	20-Jun-18	7.8	16	856	<2.0	12
		July	First	06-Jul-18	8.3	18	828	<2.0	16
		July	Second	16-Jul-18	8.3	22	814	<2.0	24
		August	First	06-Aug-18	7.4	20	800	<2.0	24
		August	Second	24-Aug-18	7.6	16	826	<2.0	20
		September	First	07-Oct-18	7.7	18	820	<2.0	24
		October	First	21-Oct-18	7.5	20	800	<2.0	16
		October	Second	02-Nov-18	7.5	18	786	<2.0	8
		November	First	17-Nov-18	7.6	28	772	<2.0	16
		November	Second	13-Dec-18	8.4	28	820	<2.0	16
		December	First	19-Dec-18	8.5	30	752	<2.0	12
		December	Second	10-Jan-19	7.8	18	776	<2.0	16
		January	First	28-Jan-19	8.5	18	800	<2.0	16
		January	Second	02-Feb-19	8.6	24	776	<2.0	20
		February	First	23-Feb-19	8.4	28	754	<2.0	28
		February	Second	20-Mar-19	8.5	22	816	<2.0	8

Note: all figures 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 QUALITY STANDARDS (29 PARAMETERS)

Cluster	Mohanpur OCP	Mohanpur OCP	**Effluent Water (MOEF Schedule-VI Standard)**
Station No	15MW1	15MW1	
Station Name	Mine discharge water from Mohanpur OCP	Mine discharge water from Mohanpur OCP	
Month	September	March	
Fortnight	First	First	
Date of Sampling	07-Sep-18	07-Mar-19	
Colour	4	4	Unobjectionable
Odour	Unobjectionable	Unobjectionable	Unobjectionable
TSS	22	24	100.0
pH	7.82	8.10	5.5-9.0
Temperature (Deg C)	29.2	31.1	Shall not exceed 5^0C above the receiving water temp
Oil & Grease	<2.0	<2.0	10.0
Total Residual Chlorine	<0.02	<0.02	1.0
Ammonical Nitrogen	0.83	0.58	50.0
Total Kjeldahl Nitrogen	1.52	1.48	100.0
Free Ammonia	<0.4	<0.02	5.0
BOD	8	4	30.0
COD	24	20	250.0
Arsenic	<0.005	<0.002	0.2
Lead	<0.005	<0.005	0.1
Hexavalent Chromium	0.02	0.03	0.1
Total Chromium	0.07	0.07	2.0
Copper	0.04	0.04	3.0
Zinc	0.02	0.04	5.0
Selenium	<0.005	<0.002	0.05
Nickel	<0.10	<0.01	3.0
Fluoride	0.46	0.36	2.0
Dissolved Phosphate	1.68	1.56	5.0
Sulphide	0.014	0.011	2.0
Phenolics	<0.001	<0.001	1.0
Manganese	0.38	0.28	2.0
Iron	0.16	0.14	3.0
Nitrate Nitrogen	3.8	3.4	10.0
Cadmium	<0.001	<0.005	0.003
Total Dissolved Solids	800	800	Not Specified

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

Annexure – III

Groundwater Quality for Q/E June'16 and Sept'16

Area	Mohanpur OCP	Mohanpur OCP	Mohanpur OCP	Mohanpur OCP	Mohanpur OCP	Mohanpur OCP	Mohanpur OCP	Mohanpur OCP	**Indian Drinking Water Standard (IS-10500:2012)**	
Project	15GW2	15GW3	15GW4	15GW5	15GW1	15DW1	15GW2	15GW3		
Quarter	Dugwell at Amdiha Village	Dugwell at Amdiha More Village	Dugwell at Amdiha Primary School	Dugwell at Baliapur Kalimandir	Dugwell at Mohanpur Village	Tap water supplied from OH tank	Dugwell at Amdiha Village	Dugwell at Amdiha More Village		
Sample No	May'18	May'18	May'18	May'18	May'18	Sept'18	May'18	May'18		
Sampling Station	Second	Second	Second	Second	Second	First	Second	Second		
Date of sampling	28-May-18	28-May-18	28-May-18	28-May-18	28-May-18	07-Sep-18	28-May-18	28-May-18	**Acceptable Limit**	**Permissible Limit**
Colour,Hazen unit Max	5	4	3	4	3	2	5	4	5.0	15.0
Odour	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Unobjectionable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity,NTU Max	3	2	2	2	2	1	3	2	1.0	5.0
pH	8.31	7.48	8.34	8.28	8.29	8.10	8.31	7.48	6.5-8.5	No relaxation
Total Hardness	472	368	312	280	248	130	472	368	200.0	600.0
Iron	<0.06	<0.06	<0.06	<0.06	<0.06	0.06	<0.06	<0.06	0.30	No relaxation
Chlorides	133	165	148	97	87	35	133	165	250.0	1000.0
Res Free chlorine	0.05	0.08	0.05	0.06	0.04	0.05	0.05	0.08	0.20	1.0
Dissolved Solids	1050	816	760	650	546	256	1050	816	500.0	2000.0
Calcium	192	148	128	124	112	52	192	148	75.0	200.0
Copper	<0.03	<0.03	<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	<0.02	<0.02	0.1	0.3
Sulphate	159	92	86	58	65	42	159	92	200.0	400.0
Nitrate	11.30	7.20	12.50	8.80	7.90	18.56	11.30	7.20	45.0	No relaxation
Fluoride	0.42	0.56	0.72	0.40	0.94	0.30	0.42	0.56	1.0	1.5
Selenium	<0.005	<0.005	<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	<0.005	<0.005	0.01	0.05
Lead	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	0.01	No relaxation
Zinc	0.02	0.03	0.03	0.03	0.04	0.03	0.02	0.03	5.0	15.0
Hex Chromium	<0.01	<0.01	<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	<0.01	<0.01	0.5	1.0
Coliforms (MPN)	Nil	Nil	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	0.001	0.001
Alkalinity	236	148	180	208	108	110	236	148	200.0	200.0
Cadmium	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	0.003	0.003

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

Annexure – IV

Groundwater Level

Cluster No	Station No	Station Name	Month	Fortnight	Date of Sampling	Ground Water Level BGL (mtr)
Mohanpur OCP	15GWL5	Dugwell at Baliapur Kalimandir	May	First	28-May-18	2.8
	15GWL5	Dugwell at Baliapur Kalimandir	August	First	10-Aug-18	1.5
	15GWL5	Dugwell at Baliapur Kalimandir	November	First	17-Nov-18	2.9
	15GWL5	Dugwell at Baliapur Kalimandir	January	First	07-Jan-19	3.85
	15GWL4	Dugwell at Amdiha Primary School	May	First	28-May-18	8.7
	15GWL4	Dugwell at Amdiha Primary School	August	First	10-Aug-18	6.8
	15GWL4	Dugwell at Amdiha Primary School	November	First	17-Nov-18	8.6
	15GWL4	Dugwell at Amdiha Primary School	January	First	07-Jan-19	7.25
	15GWL3	Dugwell at Amdiha More Village	May	First	28-May-18	3.6
	15GWL3	Dugwell at Amdiha More Village	August	First	10-Aug-18	2.65
	15GWL3	Dugwell at Amdiha More Village	November	First	17-Nov-18	2.8
	15GWL3	Dugwell at Amdiha More Village	January	First	07-Jan-19	3.90
	15GWL2	Dugwell at Amdiha Village	May	First	28-May-18	7.4
	15GWL2	Dugwell at Amdiha Village	August	First	10-Aug-18	5.6
	15GWL2	Dugwell at Amdiha Village	November	First	17-Nov-18	7.2
	15GWL2	Dugwell at Amdiha Village	January	First	07-Jan-19	7.45
	15GWL1	Dugwell at Mohanpur Village	May	First	28-May-18	1.5
	15GWL1	Dugwell at Mohanpur Village	August	First	10-Aug-18	1.1
	15GWL1	Dugwell at Mohanpur Village	November	First	17-Nov-18	1.8
	15GWL1	Dugwell at Mohanpur Village	January	First	07-Jan-19	2.05

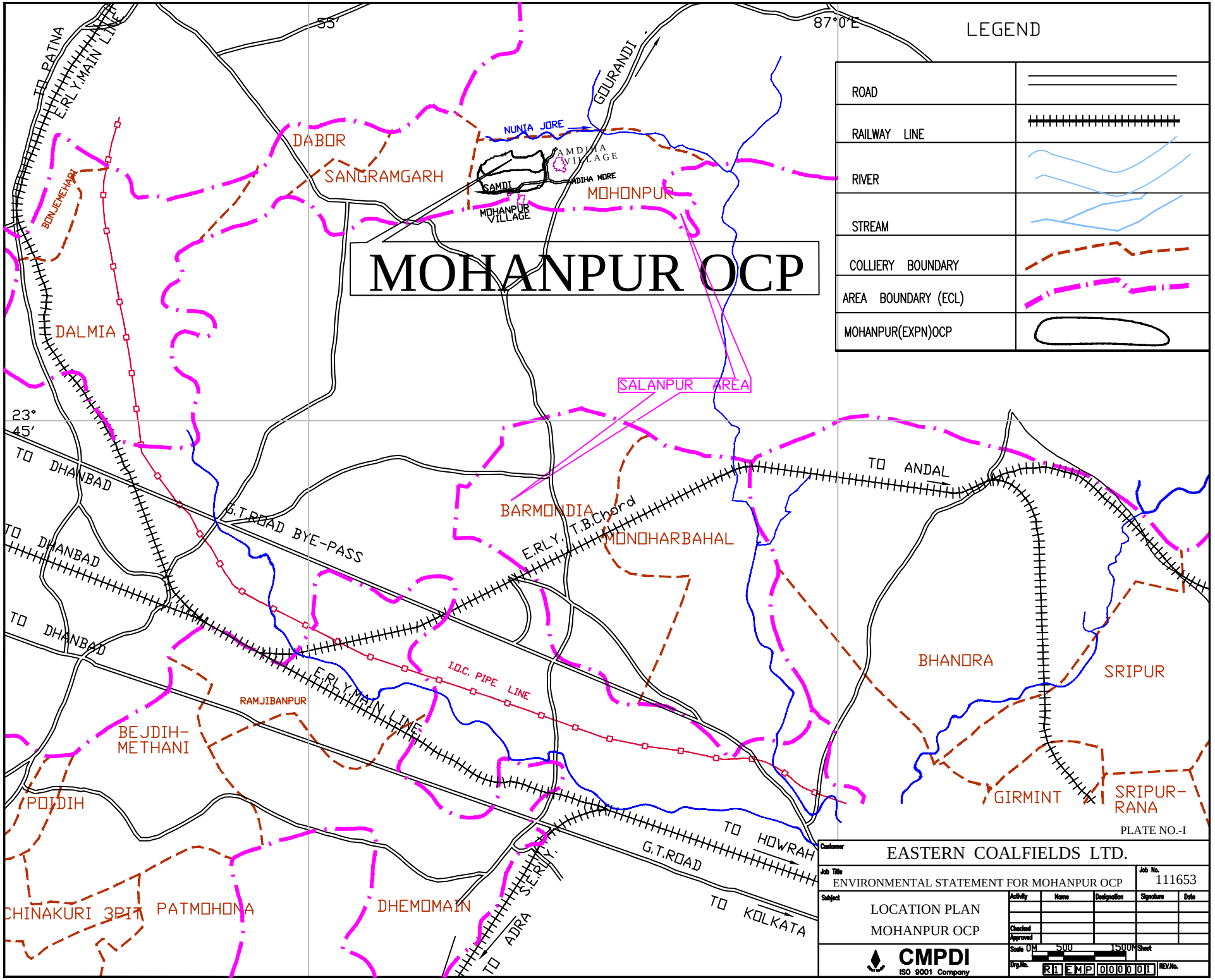
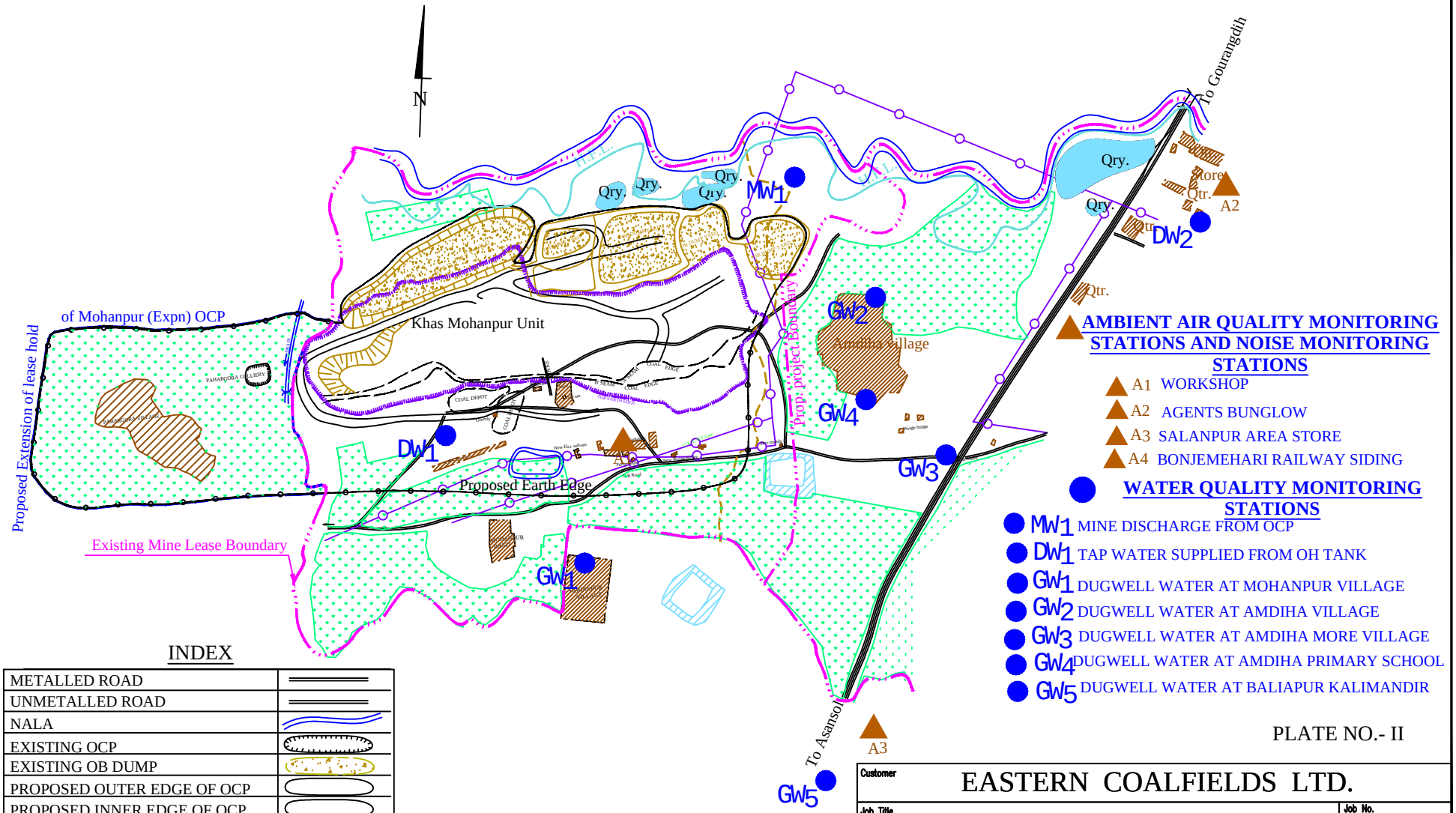


PLATE NO.-I

Customer	EASTERN COALFIELDS LTD.
Job Title	ENVIRONMENTAL STATEMENT FOR MOHANPUR OCP
Job No.	111653
Subject	LOCATION PLAN MOHANPUR OCP
Activity / Name / Designation / Signature / Date	
Checked / Approved	
Scale	0M 500 1500M
Sheet	
Drg.No.	RI EMP 000001
REV.No.	

CMPDI
ISO 9001 Company



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PROPOSED INNER EDGE OF OCP	
BUILT-UP AREA	
CULTIVATION LAND	
EXISTING LEASEHOLD BOUNDARY	
PROJECT BOUNDARY	
UNIT BOUNDARY	
TANK	
WASTE LAND	

PLATE NO.- II

Customer: EASTERN COALFIELDS LTD.

Job Title: ENVIRONMENTAL STATEMENT FOR MOHANPUR OCP

Job No.: 111653

Subject: PLAN SHOWING LOCATION OF MONITORING STATIONS

Activity	Name	Designation	Signature	Date
Drawn				
Checked				
Approved				
Hd.of the Deptt.				

CMPDI
ISO 9001 Company

Scale: 0 40M 160M

Sheet

Drg.No. R1 ENV 000000 REV.No.