

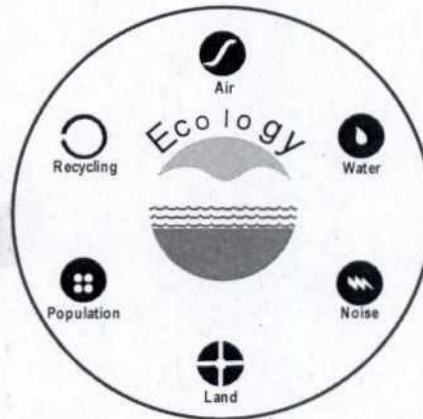
**Environmental Monitoring Report
Of
Ib Valley Area
For
May-2023**

Ib Valley Coalfield



MCL

Mahanadi Coalfields Limited



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A Mini Ratna Company

Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report**AMBIENT AIR QUALITY DATA****Area :****Ib Valley****(Compliance Station)****Project :****Lajkura OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
12-May-23	Near South Coal Stock	182	89	38	10.52	17.21	Mining Activities, Coal Transportation	About 500m
12-May-23	Near Project Office	176	85	36	12.74	15.65	Domestic, OCP, Transportation	About 500m
26-May-23	Near South Coal Stock	206	99	49	12.13	12.72	Mining Activities, Coal Transportation	About 500m
26-May-23	Near Project Office	178	86	38	15.13	20.91	Domestic, OCP, Transportation	About 500m

Project :**Samleswari OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
12-May-23	West of the Mine	194	94	44	16.52	17.41	Distance From 'y' Curve Railway Siding	About 450m
12-May-23	South of the Mine	189	92	42	10.52	13.78	Mine Haul Roads	About 400m
12-May-23	South East of the Mine	186	91	40	11.85	16.52	Coal Transportation Road	About 500m
12-May-23	East of the Mine	184	88	39	15.55	17.85	Coal Transportation Road	About 500m
26-May-23	West of the Mine	202	96	48	13.58	19.28	Distance From 'y' Curve Railway Siding	About 450m
26-May-23	South of the Mine	195	93	44	14.77	15.62	Mine Haul Roads	About 400m
26-May-23	South East of the Mine	197	94	45	11.49	14.89	Coal Transportation Road	About 500m
26-May-23	East of the Mine	188	91	42	10.50	10.72	Coal Transportation Road	About 500m

MoEF Standards Notification dated 25th September, 2000

500

250

120

120

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Ib Valley

(Reference Station)

Project :

Lajkura OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
02-May-23	VIP Guest House, IB Valley	155	73	28	15.98	18.54	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
02-May-23	Chuakani	160	78	30	11.52	16.58	Transportation	About 300m
02-May-23	Khokelmal	146	64	25	16.52	18.45	Railway siding	About 1000m
03-May-23	Khokelmal	136	58	21	12.65	12.56	Railway siding	About 1000m
03-May-23	VIP Guest House, IB Valley	150	65	26	14.52	16.87	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
03-May-23	Chuakani	164	81	32	14.74	17.58	Transportation	About 300m
06-May-23	Khokelmal	150	68	26	14.32	19.57	Railway siding	About 1000m
08-May-23	Chuakani	168	83	34	12.56	14.71	Transportation	About 300m
08-May-23	Khokelmal	142	61	23	14.56	16.58	Railway siding	About 1000m
08-May-23	VIP Guest House, IB Valley	135	56	20	12.5	17.58	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
09-May-23	VIP Guest House, IB Valley	141	60	23	11.54	14.98	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
09-May-23	Chuakani	144	62	24	13.98	16.54	Transportation	About 300m
16-May-23	VIP Guest House, IB Valley	162	78	30	17.74	18.22	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
16-May-23	Chuakani	155	74	28	17.34	10.62	Transportation	About 300m
16-May-23	Khokelmal	156	73	28	15.22	16.66	Railway siding	About 1000m
17-May-23	VIP Guest House, IB Valley	165	82	32	14.24	13.13	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
17-May-23	Khokelmal	154	71	27	11.60	11.38	Railway siding	About 1000m

*NAAQS, 2009

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Ib Valley

(Reference Station)

17-May-23	Chuakani	142	61	23	12.30	13.08	Transportation	About 300m
22-May-23	Chuakani	168	83	34	13.75	18.25	Transportation	About 300m
22-May-23	Khokelmal	163	81	31	16.56	17.51	Railway siding	About 1000m
22-May-23	VIP Guest House, IB Valley	141	61	23	17.69	12.51	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
23-May-23	Chuakani	144	62	24	17.77	10.42	Transportation	About 300m
23-May-23	VIP Guest House, IB Valley	144	63	24	15.76	16.67	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
23-May-23	Khokelmal	153	73	27	13.39	19.47	Railway siding	About 1000m
29-May-23	Khokelmal	158	76	29	17.40	20.5	Railway siding	About 1000m
29-May-23	Chuakani	155	72	28	12.03	14.17	Transportation	About 300m
30-May-23	Chuakani	168	82	34	18.43	14.76	Transportation	About 300m
30-May-23	Khokelmal	149	68	26	13.94	12.05	Railway siding	About 1000m

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Test Report

AMBIENT AIR QUALITY DATA

Area : **Ib Valley**

(Reference Station)

Project :

Samleswari OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
02-May-23	Khokelmal (Reported)	146	64	25	16.52	18.45	Railway siding	About 1000m
02-May-23	Rampur Sub Area (Reported)	162	81	30	16.59	22.58	Coal Stock And CT Road	About 1000m
03-May-23	Rampur Sub Area (Reported)	149	68	26	10.25	16.32	Coal Stock And CT Road	About 1000m
03-May-23	Khokelmal (Reported)	136	58	21	12.65	12.56	Railway siding	About 1000m
06-May-23	Khokelmal (Reported)	150	68	26	14.32	19.57	Railway siding	About 1000m
08-May-23	Khokelmal (Reported)	142	61	23	14.56	16.58	Railway siding	About 1000m
08-May-23	Rampur Sub Area (Reported)	155	73	28	17.58	16.58	Coal Stock And CT Road	About 1000m
09-May-23	Rampur Sub Area (Reported)	159	75	29	11.56	16.85	Coal Stock And CT Road	About 1000m
16-May-23	Rampur Sub Area (Reported)	166	82	33	14.95	20.09	Coal Stock And CT Road	About 1000m
16-May-23	Khokelmal (Reported)	156	73	28	15.22	16.66	Railway siding	About 1000m
17-May-23	Rampur Sub Area (Reported)	162	79	30	13.56	14.64	Coal Stock And CT Road	About 1000m
17-May-23	Khokelmal (Reported)	154	71	27	11.60	11.38	Railway siding	About 1000m
22-May-23	Rampur Sub Area (Reported)	155	75	28	11.93	22.62	Coal Stock And CT Road	About 1000m
22-May-23	Khokelmal (Reported)	163	81	31	16.56	17.51	Railway siding	About 1000m
23-May-23	Rampur Sub Area (Reported)	153	72	27	12.04	15.53	Coal Stock And CT Road	About 1000m
23-May-23	Khokelmal (Reported)	153	73	27	13.39	19.47	Railway siding	About 1000m
29-May-23	Khokelmal (Reported)	158	76	29	17.40	20.5	Railway siding	About 1000m

*NAAQS,2009

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AMBIENT AIR QUALITY DATA

Area :

Ib Valley

(Reference Station)

29-May-23	Rampur Sub Area (Reported)	137	58	21	17.41	18.29	Coal Stock And CT Road	About 1000m
30-May-23	Rampur Sub Area (Reported)	146	66	25	13.53	12.84	Coal Stock And CT Road	About 1000m
30-May-23	Khokelmal (Reported)	149	68	26	13.94	12.05	Railway siding	About 1000m

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Samaleswari OCP					
Monitoring Station	Khokelmal (Reported Only)					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	6.53	<0.1	<1.0	<1.0	0.2
29-May-23	<20.0	7.01	<0.1	<1.0	<1.0	0.1
23-May-23	<20.0	4.63	<0.1	<1.0	<1.0	0.3
22-May-23	<20.0	5.55	<0.1	<1.0	<1.0	0.1
17-May-23	<20.0	6.23	<0.1	<1.0	<1.0	0.2
16-May-23	<20.0	5.47	<0.1	<1.0	<1.0	0.2
08-May-23	<20.0	5.31	<0.1	<1.0	<1.0	0.1
06-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.3
03-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.2
03-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)

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BHUBANESWAR

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Lajkura OCP					
Monitoring Station	Khokelmal					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	6.53	<0.1	<1.0	<1.0	0.2
29-May-23	<20.0	7.01	<0.1	<1.0	<1.0	0.1
23-May-23	<20.0	4.63	<0.1	<1.0	<1.0	0.3
22-May-23	<20.0	5.55	<0.1	<1.0	<1.0	0.1
17-May-23	<20.0	6.23	<0.1	<1.0	<1.0	0.2
16-May-23	<20.0	5.47	<0.1	<1.0	<1.0	0.2
07-May-23	<20.0	5.31	<0.1	<1.0	<1.0	0.1
06-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.3
03-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.2
02-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)

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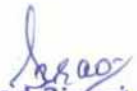
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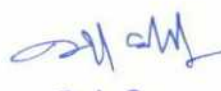
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Lajkura OCP					
Monitoring Station	Chukani					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	5.55	<0.1	<1.0	<1.0	0.2
29-May-23	<20.0	5.43	<0.1	<1.0	<1.0	0.1
23-May-23	<20.0	5.45	<0.1	<1.0	<1.0	0.1
22-May-23	<20.0	5.47	<0.1	<1.0	<1.0	0.2
17-May-23	<20.0	4.21	<0.1	<1.0	<1.0	0.3
16-May-23	<20.0	7.12	<0.1	<1.0	<1.0	0.1
09-May-23	<20.0	5.31	<0.1	<1.0	<1.0	0.2
08-May-23	<20.0	6.30	<0.1	<1.0	<1.0	0.3
03-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.1
02-May-23	<20.0	7.13	<0.1	<1.0	<1.0	0.2
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Samleswari OCP					
Monitoring Station	Rampur Sub Area (Reported Only)					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	5.25	<0.1	<1.0	<1.0	0.2
29-May-23	<20.0	4.62	<0.1	<1.0	<1.0	0.1
23-May-23	<20.0	5.94	<0.1	<1.0	<1.0	0.3
22-May-23	<20.0	5.97	<0.1	<1.0	<1.0	0.2
17-May-23	<20.0	3.97	<0.1	<1.0	<1.0	0.1
16-May-23	<20.0	4.29	<0.1	<1.0	<1.0	0.2
09-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.3
08-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.1
03-May-23	<20.0	4.56	<0.1	<1.0	<1.0	0.3
02-May-23	<20.0	6.21	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (11hours)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: IB Valley

Project	Lajkura OCP					
Monitoring Station	VIP Guest House, IB Valley					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
23-May-23	<20.0	4.65	<0.1	<1.0	<1.0	0.2
22-May-23	<20.0	5.42	<0.1	<1.0	<1.0	0.1
17-May-23	<20.0	4.16	<0.1	<1.0	<1.0	0.2
16-May-23	<20.0	4.12	<0.1	<1.0	<1.0	0.2
09-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.3
08-May-23	<20.0	5.78	<0.1	<1.0	<1.0	0.2
03-May-23	<20.0	6.66	<0.1	<1.0	<1.0	0.1
02-May-23	<20.0	6.14	<0.1	<1.0	<1.0	0.3
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Ib Valley

PROJECT :

Samleswari OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-May-23	South-East of the Mine	64.8	61.6
09-May-23	South of the Mine	64.3	59.4
09-May-23	Rampur Sub Area	62.4	58.3
09-May-23	West of the Mine	62.1	57.9
09-May-23	Khokelmal (Reported Only)	64.6	60.3
09-May-23	East of the Mine	66.7	62.9
17-May-23	South of the Mine	66.4	69.4
17-May-23	West of the Mine	63.7	58.5
17-May-23	Rampur Sub Area	63.8	60.7
17-May-23	East of the Mine	64.9	62.3
17-May-23	Khokelmal (Reported Only)	60.7	58.3
17-May-23	South-East of the Mine	67.2	64.1

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Ib Valley

PROJECT :

Lajkura OCP


DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-May-23	Near South Coal Stock	66.7	62.3
09-May-23	Near Project Office	63.6	57.2
09-May-23	VIP Guest House, IB Valley	62.5	58.2
09-May-23	Chuakani	66.3	62.2
09-May-23	Khokelmal	64.6	60.3
17-May-23	Near South Coal Stock	68.5	69.2
17-May-23	Near Project Office	67.3	70.4
17-May-23	VIP Guest House, IB Valley	65.3	62.6
17-May-23	Chuakani	64.1	60.5
17-May-23	Khokelmal	60.7	58.3

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)


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TABLE--

EFFLUENT QUALITY DATA

Area :

Ib Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Samaleswari OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Mine Sump Water	7.14	<4.0	22	20	-	-	-	
09-May-23	Inlet of ETP	7.12	<4.0	46	32	-	-	-	
09-May-23	Outlet of ETP	7.64	<4.0	28	24	-	-	-	

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Date of Sampling	Sampling Station	Project : Lajkura OCP							Remarks
		pH	Oil & Grease	TSS	COD	BOD	TDS	DO	
09-May-23	STP Outlet	6.69	-	62	-	<2	-	-	2.2 MPN FC /100 mL
23-May-23	STP Outlet	6.81	-	48	-	<2	-	-	1.8 MPN FC /100 mL

G.S.R. 126 5(E) Effluent discharge standards (applicable to all mode of disposal), Sewage Treatment Plants (STPs)	6.5-9.5	-	<100	-	30	-	<1000
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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Samaleswari OCP 1

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	STP Outlet	7.28	-	36	-	<2	-	-	1.1 MPN FC /100 mL
23-May-23	STP Outlet	7.51		30		<2			1.8 MPN FC /100 mL

G.S.R. 126 5(E) Effluent discharge standards (applicable to all mode of disposal), Sewage Treatment Plants (STPs)	6.5-9.5	-	<100	-	30	-	<1000
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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Lajkura OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Inlet of MDTP	4.62	<4.0	38	28	-	-	-	
09-May-23	Inlet of ETP	6.89	<4.0	68	40	-	-	-	
09-May-23	Outlet of ETP	7.42	<4.0	32	36	-	-	-	
09-May-23	Mine Sump Water	4.48	<4.0	26	20	-	-	-	
09-May-23	Outlet of MDTP	4.86	<4.0	28	16	-	-	-	
23-May-23	Outlet of MDTP	4.95	<4.0	32	28				

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

IB Valley

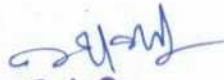
(All dimensions are in mg/l unless otherwise stated except pH)

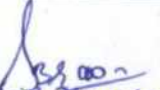
Project :

Central Hospital

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Discharge of Hospital	7.63	<4.0	26	12	<2	-	-	

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data IB Valley Area

Project / OCP Monitoring Station	Samaleswari OCP		Indian Drinking Standards (IS-10500):2012	
	Well Water From Kudopali	Tap Water From Samaleswari OCP Colony	Acceptable	Permissible
Date of Sampling	9-May-2023	9-May-2023	Acceptable	Permissible
Colour (Hazen)	1	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	5
pH	7.93	8.03	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	120.4	124.9	200	600
Total Hardness (Ca CO ₃)(mg/L)	80	96	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	23.78	21.8	250	1000
Total Dissolve Solid(mg/L)	172	180	500	2000
Calcium(mg/L)	19.39	16.16	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	2.78	3	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.14	0.16	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation

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Drinking Water Quality Data IB Valley Area

Project / OCP	Samleswari OCP		Indian Drinking Standards (IS-10500):2012	
	Water from IWSS, IB Valley Area	Well Water From Lajkura	Acceptable	Permissible
Date of Sampling	9-May-2023	9-May-2023	Acceptable	Permissible
Colour(Hazen)	3	3	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	5
pH	8.08	7.79	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	116	120.4	200	600
Total Hardness (Ca CO ₃)(mg/L)	76	92	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	19.82	21.8	250	1000
Total Dissolve Solid(mg/L)	166	160	500	2000
Calcium(mg/L)	24.24	22.63	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	3	3	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.16	0.15	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	—	—
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation

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Drinking Water Quality Data IB Valley Area

Project / OCP	Lajkura OCP		Indian Drinking Standards (IS-10500):2012	
	Monitoring Station	Madhuban Nagar Well Water	Adarsh Nagar Colony Well Water	
Date of Sampling	9-May-2023	9-May-2023	Acceptable	Permissible
Colour(Hazen)	3	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	3	1	5
pH	8.06	7.89	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	133.8	142.7	200	600
Total Hardness (Ca CO3) (mg/L)	165	116	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	77.3	73.33	250	1000
Total Dissolve Solid(mg/L)	308	288	500	2000
Calcium(mg/L)	50.10	40.4	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	30.46	33.67	200	400
Nitrate(mg/L)	16.13	15.94	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.10	0.19	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation

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Drinking Water Quality Data IB Valley Area

Project / OCP	Lajkura OCP		Indian Drinking Standards (IS-10500):2012	
	Chhualiberna Village Well Water	VIP Guest House Water		
Monitoring Station				
Date of Sampling	9-May-2023	9-May-2023	Acceptable	Permissible
Colour(Hazen)	2	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	3	2	1	5
pH	7.75	7.59	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	138.3	80.3	200	600
Total Hardness (Ca CO₃)(mg/L)	161	72	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	79.3	23.78	250	1000
Total Dissolve Solid(mg/L)	318	174	500	
Calcium(mg/L)	58.18	22.63	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	28.72	31.46	200	400
Nitrate(mg/L)	16.34	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.13	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent		
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation


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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Ib valley

Project:

Lajkura OCP


Date of Sampling	Name of the Station	Ground Levels (in meter)
5/30/2023	Piezometer No MIP 02; Village Gumadera; Village High School 21°47'50" N Longitude 83°52'37" E	30

Project:

Samaleswari OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/31/2023	Piezometer No MIP 04; Village Kutabaga; (Believer's Church School) Latitude 21° 47 '55" N Longitude 83°56'24" E	11


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TABLE--

Well Water Level Monitoring Data

Area :

Ib Valley

Project


Lajkura OCP

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
23-May-23	Adarsh Nagar Colony Well Water	4.19
23-May-23	Chauliberna Village Well Water	2.87

Project

Samleswari OCP

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
23-May-23	Well of Lajkura (Reported)	4.78
23-May-23	Well of Kudopali	3.25


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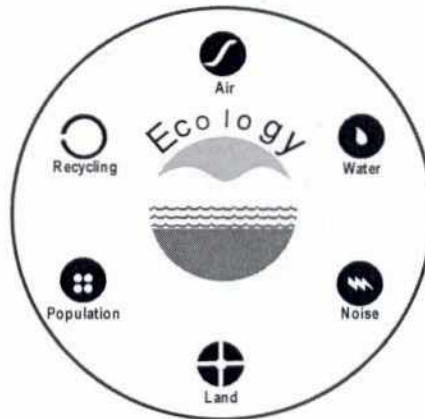
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**Environmental Monitoring Report
Of
Lakhanpur Area
For
May-2023**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

The test report shall not be reproduced in part or full without written approval of the competent authority

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Test Report**AMBIENT AIR QUALITY DATA****Area : Lakhanpur****(Compliance Station)****Project :****Belpahar OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
13-May-23	Near Magazine House	187	92	41	11.52	15.64	Mining Activities	About 500m
13-May-23	Near Central Workshop	182	87	38	10.59	15.45	Mining Activities	About 500m
27-May-23	Near Magazine House	184	87	39	19.91	18.77	Mining Activities	About 500m
27-May-23	Near Central Workshop	190	91	42	14.87	19.27	Mining Activities	About 500m

Project :**Lakhanpur OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
13-May-23	Near Quarry 3	168	83	34	16.56	18.56	Coal Stockyard, Surface Bunker, Coal Transport	About 500m
13-May-23	Near Lilari Nallah Pump House	176	85	36	11.84	12.55	Mining Activities	About 500m
27-May-23	Near Quarry 3	194	91	43	10.47	10.08	Coal Stockyard, Surface Bunker, Coal Transport	About 500m
27-May-23	Near Lilari Nallah Pump House	175	83	36	14.82	21.54	Mining Activities	About 500m

Project :**Lilari OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
13-May-23	Near Lilari Magazine House	181	87	38	16.32	14.91	Coal Transportation	About 500m
27-May-23	Near Lilari Magazine House	186	88	40	12.74	17.37	Coal Transportation	About 500m

MoEF Standards Notification dated 25th September, 2000

500	250		120	120
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Test Report

AMBIENT AIR QUALITY DATA

Area : **Lakhanpur**

(Reference Station)

Project : **Lakhanpur OCP**

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
02-May-23	South West of Quarry 5	153	72	27	12.41	15.65	Mining Related Activities	About 900m
02-May-23	South of Quarry 6	154	70	27	15.89	20.56	Mining Activities	About 500m
03-May-23	South of Quarry 6	141	62	23	16.87	12.98	Mining Activities	About 500m
03-May-23	South West of Quarry 5	164	68	32	18.64	12.78	Mining Related Activities	About 900m
08-May-23	South West of Quarry 5	160	77	30	17.85	19.58	Mining Related Activities	About 900m
08-May-23	South of Quarry 6	146	66	25	10.56	16.58	Mining Activities	About 500m
09-May-23	South West of Quarry 5	150	68	26	14.65	18.58	Mining Related Activities	About 900m
09-May-23	South of Quarry 6	158	60	29	12.56	18.57	Mining Activities	About 500m
16-May-23	South West of Quarry 5	143	63	24	14.39	17.28	Mining Related Activities	About 1000m
16-May-23	South of Quarry 6	155	74	28	10.99	14.25	Mining Activities	About 500m
17-May-23	South West of Quarry 5	149	69	26	12.45	11.52	Mining Related Activities	About 1000m
17-May-23	South of Quarry 6	169	81	34	16.87	13.2	Mining Activities	About 500m
22-May-23	South of Quarry 6	152	70	27	18.38	17.32	Mining Activities	About 500m
22-May-23	South West of Quarry 5	158	77	29	14.92	15.78	Mining Related Activities	About 1000m
23-May-23	South West of Quarry 5	165	80	32	15.85	14.25	Mining Related Activities	About 1000m
23-May-23	South of Quarry 6	161	79	30	11.58	15.41	Mining Activities	About 500m

*N.A.Q.S.2008		100	60	80	80
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Test Report

AMBIENT AIR QUALITY DATA

Area : **Lakhanpur**

(Reference Station)

Project : **Belpahar OCP**

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
02-May-23	South of the Mine	157	75	29	13.56	17.85	Mining Activities, Coal Transportation	About 500m
02-May-23	East of the Mine	163	80	32	16.52	18.73	Mining Activities	About 500m
03-May-23	East of the Mine	149	68	26	14.95	16.58	Mining Activities	About 500m
03-May-23	South of the Mine	143	62	24	12.45	19.58	Mining Activities, Coal Transportation	About 500m
08-May-23	South of the Mine	138	58	22	11.74	16.57	Mining Activities, Coal Transportation	About 500m
08-May-23	East of the Mine	144	62	24	16.83	19.54	Mining Activities	About 500m
09-May-23	South of the Mine	149	68	26	16.31	12.85	Mining Activities, Coal Transportation	About 500m
09-May-23	East of the Mine	161	78	30	10.52	14.36	Mining Activities	About 500m
16-May-23	South of the Mine	138	58	21	15.21	16.23	Mining Activities, Coal Transportation	About 500m
16-May-23	East of the Mine	163	80	31	19.44	15.57	Mining Activities	About 500m
17-May-23	South of the Mine	154	71	27	16.32	17.27	Mining Activities, Coal Transportation	About 500m
17-May-23	East of the Mine	139	60	22	16.64	22.08	Mining Activities	About 500m
22-May-23	East of the Mine	150	68	26	11.72	11.68	Mining Activities	About 500m
22-May-23	South of the Mine	140	59	22	15.54	18.66	Mining Activities, Coal Transportation	About 500m
23-May-23	South of the Mine	146	65	25	19.78	19.53	Mining Activities, Coal Transportation	About 500m
23-May-23	East of the Mine	156	73	28	13.57	15.63	Mining Activities	About 500m

*N.I.QS.2000

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Lakhanpur OCP					
Monitoring Station	South of Quarry 6					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	(µg/m ³)	(µg/m ³)	(µg/m ³)	(ng/m ³)	(ng/m ³)	(mg/m ³)
23-May-23	<20.0	6.12	<0.1	<1.0	<1.0	0.3
22-May-23	<20.0	5.42	<0.1	<1.0	<1.0	0.4
17-May-23	<20.0	6.14	<0.1	<1.0	<1.0	0.2
16-May-23	<20.0	5.78	<0.1	<1.0	<1.0	0.1
09-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.1
08-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.3
03-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.2
02-May-23	<20.0	7.05	<0.1	<1.0	<1.0	0.3
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)

Project	Lakhanpur OCP					
Monitoring Station	South West of Quarry 5					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	(µg/m ³)	(µg/m ³)	(µg/m ³)	(ng/m ³)	(ng/m ³)	(mg/m ³)
23-May-23	<20.0	4.52	<0.1	<1.0	<1.0	0.1
22-May-23	<20.0	4.78	<0.1	<1.0	<1.0	0.2
17-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.3
16-May-23	<20.0	7.39	<0.1	<1.0	<1.0	0.2
09-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.1
08-May-23	<20.0	6.65	<0.1	<1.0	<1.0	0.2
03-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.2
02-May-23	<20.0	5.21	<0.1	<1.0	<1.0	0.3
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)

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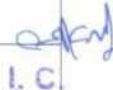
AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Lakhanpur

Project	Belpahar OCP					
Monitoring Station	East of the Mine					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
23-May-23	<20.0	5.21	<0.1	<1.0	<1.0	0.1
22-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.1
17-May-23	<20.0	6.12	<0.1	<1.0	<1.0	0.3
16-May-23	<20.0	7.15	<0.1	<1.0	<1.0	0.2
09-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.2
08-May-23	<20.0	4.69	<0.1	<1.0	<1.0	0.1
03-May-23	<20.0	4.21	<0.1	<1.0	<1.0	0.3
02-May-23	<20.0	6.14	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 Annual)	04 (1hours)

Project	Belpahar OCP					
Monitoring Station	South of the Mine					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
23-May-23	<20.0	6.34	<0.1	<1.0	<1.0	0.3
22-May-23	<20.0	6.12	<0.1	<1.0	<1.0	0.2
17-May-23	<20.0	6.45	<0.1	<1.0	<1.0	0.2
16-May-23	<20.0	5.12	<0.1	<1.0	<1.0	0.3
09-May-23	<20.0	7.16	<0.1	<1.0	<1.0	0.1
08-May-23	<20.0	5.78	<0.1	<1.0	<1.0	0.2
03-May-23	<20.0	5.54	<0.1	<1.0	<1.0	0.1
02-May-23	<20.0	5.55	<0.1	<1.0	<1.0	0.2
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)


Area: Lakhapur


<i>Project</i>	Belpahar OCP
<i>Monitoring Station</i>	Near Central Workshop
<i>Date of sampling</i>	Carbon Monoxide (CO)
	mg/m³
27-May-23	0.2
13-May-23	0.1
Standard	04(1 Hours)

<i>Project</i>	Belpahar OCP
<i>Monitoring Station</i>	Near Magazine House
<i>Date of sampling</i>	Carbon Monoxide (CO)
	mg/m³
27-May-23	0.3
13-May-23	0.2
Standard	04(1 Hours)

<i>Project</i>	Lakhapur OCP
<i>Monitoring Station</i>	Near Quarry 3
<i>Date of sampling</i>	Carbon Monoxide (CO)
	mg/m³
27-May-23	0.2
13-May-23	0.1
Standard	04(1 Hours)

<i>Project</i>	Lakhapur OCP
<i>Monitoring Station</i>	Near Lilari Nallah Pump House
<i>Date of sampling</i>	Carbon Monoxide (CO)
	mg/m³
27-May-23	0.3
13-May-23	0.1
Standard	04(1 Hours)


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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :


Lilari OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
10-May-23	Near Lilari Magazine House	64.7	61.4
18-May-23	Near Lilari Magazine House	66.9	63.7

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)


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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :

Lakhanpur OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
10-May-23	South West of Quarry 5	62.9	59.4
10-May-23	Near Lilari Nallah Pump House	62.4	57.8
10-May-23	Near Quarry 3	63.6	59.4
10-May-23	South of Quarry 6	64.3	57.2
18-May-23	South West of Quarry 5	64.7	59.3
18-May-23	South of Quarry 6	63.4	60.6
18-May-23	Near Lilari Nallah Pump House	64.3	62.1
18-May-23	Near Quarry 3	65.9	63.7

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Lakhanpur

PROJECT :

Belpahar OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
10-May-23	Near Central Workshop	64.6	59.2
10-May-23	Near Magazine House	66.2	63.8
10-May-23	East of the Mine	65.8	60.2
10-May-23	South of the Mine	62.4	57.6
18-May-23	Near Central Workshop	69.4	65.4
18-May-23	Near Magazine House	67.7	64.1
18-May-23	South of the Mine	60.8	59.3
18-May-23	East of the Mine	64.2	60.5

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

EFFLUENT QUALITY DATA

Area :

Lakhanpur

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Lakhanpur OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
10-May-23	Outlet of Secondary Sedimentation Tank	6.91	<4.0	38	28	-	-	-	
24-May-23	Outlet of Secondary Sedimentation Tank	7.12	<4.0	44	32				

MoEF Standard Notification dated 25th September, 2000 and M&EF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

Lakhanpur

(All dimensions are in mg/l unless otherwise stated except pH)


Project :

Belpahar OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
10-May-23	Outlet of ETP	6.52	<4.0	32	36	-	-	-	
24-May-23	Outlet of ETP	6.73	<4.0	40	40				

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

Lakhanpur

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Belpahar OCP 1

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
10-May-23	Clear Water Tank of Sewage Treatment Plant	6.67	-	30	-	<2	-	-	1.1 MPN FC /100 mL
24-May-23	Clear Water Tank of Sewage Treatment Plant	6.79	-	36	-	<2	-	-	1.8 MPN FC /100 mL

G.S.R. 126 5(E) Effluent discharge standards (applicable to all mode of disposal), Sewage Treatment Plants (STPs)	6.5-9.5	-	<100	-	30	-	<1000
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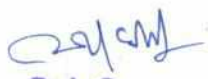
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Drinking Water Quality Data Lakhanpur Area

Project / OCP	Lakhanpur OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	LKP Project Office	Acceptable	Permissible
Date of Sampling	10-May-2023	Acceptable	Permissible
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	8.06	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	53.5	200	600
Total Hardness (Ca CO ₃)(mg/L)	88	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	19.82	250	1000
Total Dissolve Solid(mg/L)	152	500	2000
Calcium(mg/L)	27.47	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	28.74	200	400
Nitrate(mg/L)	3.72	45	No relaxation
Fluoride(mg/L)	<0.3	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation


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Drinking Water Quality Data Lakhanpur Area

Project / OCP	Belpahar OCP	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	IWSS Outlet	Acceptable	Permissible
Date of Sampling	10-May-2023	Acceptable	Permissible
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	7.43	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	58	200	600
Total Hardness (Ca CO ₃)(mg/L)	72	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	17.84	250	1000
Total Dissolve Solid(mg/L)	146	500	2000
Calcium(mg/L)	22.63	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	26.18	200	400
Nitrate(mg/L)	3.96	45	No relaxation
Fluoride(mg/L)	<0.3	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation

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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Lakhanpur

Project:

Belpahar OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/29/2023	Piezometer No MIP 08; Village Kusraloi, Inside the Premises of PrathamikVidyalaya Latitude 21.01800 N Longitude 85.13027 E	8.0
5/29/2023	Piezometer No MIP 07; Infront of DAV school Bandbahal, Inside colonysubstationLatitude 21.01800 N Longitude 85.13027 E	4.0

Project:

Lakhanpur OCP


Date of Sampling	Name of the Station	Ground Levels (in meter)
5/29/2023	Piezometer No MIP 10; Village Dahaldera; Inside the Premises of UP School. Latitude 21 ° 46 '51" N Longitude 83 ° 48'47" E	17.10
5/31/2023	Piezometer No MIP 09; Village Junion; Inside the Premises of State GovtHorticulture InstituteLatitude 21°45'49" N Longitude 83°47'42" E.	10.20

Project:

Lilari OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/29/2023	Piezometer No MIP 06; Infront of Lilari Mines Project Office. Latitude 21.77826 N Longitude 85.8580 E	38.10


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TABLE--

Well Water Level Monitoring Data

Area :

Lakhanpur

Project


Belpahar OCP

Date of sampling	Name of the Station	Depth to Water Level (in m. bgl)
24-May-23	Ubuda Village Well	4.98
24-May-23	Jurabaga Village Well	4.52

Project

Lakhanpur OCP

Date of sampling	Name of the Station	Depth to Water Level (in m. bgl)
24-May-23	Khairkuni Village Well	4.93
24-May-23	Kansar Village Well	3.86


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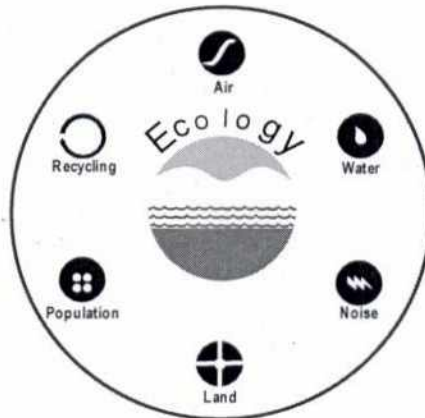

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**Environmental Monitoring Report
Of
Mahalaxmi Area
For
May-2023**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Compliance Station)

Project :

Basundhara (w) OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
06-May-23	West of Coal Stock, Near Golf Course	188	93	42	15.65	13.24	Mining Activities, OCP, Transportation	About 500m
06-May-23	South West of Working face Gopalpur Village, Near CMPDI Camp	198	94	45	14.52	19.56	Mining Activity	About 500m
06-May-23	North of the Sardega Railway Siding, Kulapada	176	85	36	16.25	19.58	Mining Activities, OCP, Coal Transportation	About 500m
20-May-23	West of Coal Stock, Near Golf Course	190	90	42	17.88	17.48	Mining Activities, OCP, Transportation	About 500m
20-May-23	South West of Working face Gopalpur Village, Near CMPDI Camp	195	93	44	14.84	14.65	Mining Activity	About 500m
20-May-23	North of the Sardega Railway Siding, Kulapada	180	86	38	14.77	16.41	Mining Activities, OCP, Coal Transportation	About 500m

MoEF Standards Notification dated 25th September, 2000

500

250

120

120

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Air Quality Monitoring

Test Report

AMBIENT AIR QUALITY DATA

Area :

Mahalaxmi

(Reference Station)

Project :

Basundhara (w) OCP

(conc. in $\mu\text{g}/\text{cu.m.}$)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
04-May-23	Ratansara Village	164	84	32	15.62	13.59	Transportation	About 100m
04-May-23	Sarangijharia Village	157	76	29	11.58	18.56	Domestic	About 500m
05-May-23	Sarangijharia Village	143	64	24	12.56	14.57	Domestic	About 500m
05-May-23	Ratansara Village	150	67	26	15.23	19.48	Transportation	About 100m
10-May-23	Sarangijharia Village	154	70	27	11.96	15.89	Domestic	About 500m
10-May-23	Ratansara Village	158	76	29	11.52	16.58	Transportation	About 100m
11-May-23	Sarangijharia Village	160	79	30	18.56	12.56	Domestic	About 500m
11-May-23	Ratansara Village	143	64	24	12.05	13.56	Transportation	About 100m
18-May-23	Sarangijharia Village	153	72	27	18.81	19.31	Domestic	About 500m
18-May-23	Ratansara Village	143	63	24	14.24	12.88	Transportation	About 100m
19-May-23	Sarangijharia Village	163	79	31	15.67	14.76	Domestic	About 500m
19-May-23	Ratansara Village	164	81	32	14.41	16.6	Transportation	About 100m
24-May-23	Sarangijharia Village	168	83	34	13.43	13.15	Domestic	About 500m
24-May-23	Ratansara Village	162	78	30	18.71	16.75	Transportation	About 100m
25-May-23	Sarangijharia Village	165	80	32	14.77	15.63	Domestic	About 500m
25-May-23	Ratansara Village	149	68	26	12.98	15.65	Transportation	About 100m
29-May-23	Ratansara Village	164	81	32	15.54	17.8	Transportation	About 100m

*NAAQS,2009

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Test Report

AMBIENT AIR QUALITY DATA

Area :


Mahalaxmi

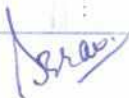
(Reference Station)

29-May-23	Sarangijharia Village	155	74	28	14.19	16.35	Domestic	About 500m
30-May-23	Sarangijharia Village	145	65	25	15.55	12	Domestic	About 500m
30-May-23	Ratansara Village	157	77	29	15.25	13.75	Transportation	About 100m

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP					
Monitoring Station	Sarangijharia Community Centre					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	4.98	<0.1	<1.0	<1.0	0.1
29-May-23	<20.0	4.68	<0.1	<1.0	<1.0	0.2
25-May-23	<20.0	4.87	<0.1	<1.0	<1.0	0.3
24-May-23	<20.0	6.08	<0.1	<1.0	<1.0	0.3
19-May-23	<20.0	5.32	<0.1	<1.0	<1.0	0.1
18-May-23	<20.0	5.66	<0.1	<1.0	<1.0	0.1
11-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.1
10-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.3
05-May-23	<20.0	7.91	<0.1	<1.0	<1.0	0.1
04-May-23	<20.0	5.47	<0.1	<1.0	<1.0	0.3
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)

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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Mahalaxmi

Project	Basundhara (W) OCP					
Monitoring Station	Ratansara Village					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	5.21	<0.1	<1.0	<1.0	0.3
29-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.3
25-May-23	<20.0	4.38	<0.1	<1.0	<1.0	0.2
24-May-23	<20.0	5.45	<0.1	<1.0	<1.0	0.1
19-May-23	<20.0	5.54	<0.1	<1.0	<1.0	0.1
18-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.2
11-May-23	<20.0	6.34	<0.1	<1.0	<1.0	0.2
10-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.21
05-May-23	<20.0	5.14	<0.1	<1.0	<1.0	0.3
04-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)


Area: Mahalaxmi

Project	Basundhara OCP
Monitoring Station	North of the Sardega Railway Siding
Date of sampling	Carbon Monoxide (CO)
	mg/m³
20-May-23	0.2
6-May-23	0.4
Standard	04(1 Hours)

Project	BasundharaOCP
Monitoring Station	West of Coal Stock Near Golf course
Date of sampling	Carbon Monoxide (CO)
	mg/m³
20-May-23	0.2
6-May-23	0.3
Standard	04(1 Hours)

Project	BasundharaOCP
Monitoring Station	South West of Working face Gopalpur Village, Near CMPDI Camp
Date of sampling	Carbon Monoxide (CO)
	mg/m³
20-May-23	0.3
6-May-23	0.2
Standard	04(1 Hours)


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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Mahalaxmi

PROJECT :

Basundhara (W) OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
11-May-23	Ratansara Village	63.6	59.4
11-May-23	South-West of Working Face -Gopalpur Village,Near CMPDIL Camp	63.6	60.2
11-May-23	North of the Sardega Railway Siding ,Kulapada	64.3	57.1
11-May-23	West of Coal Stock , Near Golf Course	61.7	57.3
11-May-23	Sarangijharia Village	62.3	57.1
19-May-23	Ratansara Village	68.9	66.4
19-May-23	North of the Sardega Railway Siding ,Kulapada	68.4	66.7
19-May-23	West of Coal Stock , Near Golf Course	63.9	60.8
19-May-23	South-West of Working Face -Gopalpur Village,Near CMPDIL Camp	68.3	70.1
19-May-23	Sarangijharia Village	61.4	58.6

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

EFFLUENT QUALITY DATA

Area :

Mahalaxmi

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Basundhara (W) OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
11-May-23	M1-Basundhara (E) OCP's Sump	7.63	<4.0	20	12	-	-	-	
11-May-23	Basundhara (W) OCP Mine Sump	7.83	<4.0	24	20	-	-	-	
25-May-23	Basundhara (W) OCP Mine Sump	7.61	<4.0	34	20				
25-May-23	M1-Basundhara (E) OCP's Sump	7.49	<4.0	26	16	-	-	-	

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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Drinking Water Quality Data Mahalaxmi Area

Project / OCP	Basundhara (W)	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Water Treatment Plant Clear Water reservoir	Acceptable	Permissible
Date of Sampling	11-May-2023	Acceptable	Permissible
Colour(Hazen)	2	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	7.61	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	31.2	200	600
Total Hardness (Ca CO ₃)(mg/L)	177	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	15.85	250	1000
Total Dissolve Solid(mg/L)	238	500	2000
Calcium(mg/L)	50.10	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	85.23	200	400
Nitrate(mg/L)	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	0.15	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	—	—
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation

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Test Report

GROUND WATER LEVEL MONITORING DATA


Area:


Mahalaxmi

Project:

Basundhara (W) OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/30/2023	Piezometer No MIP 13; Village Tumlia; Inside the Campus of ManikeswarCollege.	14.0
5/30/2023	Piezometer No MIP 17; Village Gopalpur; CMPDI Exploration Camp. Latitude 22° 3' 15"N Longitude 83 ° 42'17" E	14
5/30/2023	Piezometer No MIP 16; Village Kulhparha (new basti) on the road fromSardega to Gopalpur Latitude 22 °3'25" N Longitude 83 ° 42'36" E	29
5/30/2023	Piezometer No MIP 15; Back Side of Sardega Primary School.Latitude 22 °4'8" N Longitude 83°43'19" E	Pump fitted depth could not be measured


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TABLE--

Well Water Level Monitoring Data

Area :

Mahalaxmi

Project

Basundhara OCP

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
25-May-23	Tiklipada Village Well	2.01
25-May-23	Sardega Village Well	4.80

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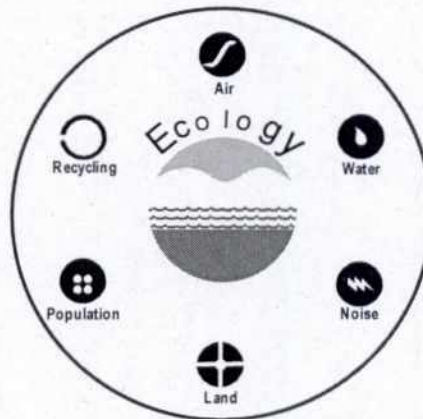
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**Environmental Monitoring Report
Of
Basundhara Area
For
May-2023**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report**AMBIENT AIR QUALITY DATA****Area :****Basundhara****(Compliance Station)****Project :****Garjanbahal OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
06-May-23	Karlikachar Village	172	84	35	13.56	20.24	External Coal Transportation Road	About 500m
06-May-23	KAN-1 Near Coal Sampling Lab	202	95	46	12.56	15.49	Railway Siding, Transportation	About 500m
06-May-23	Garjanbahal Village	182	88	38	15.64	17.32	External Coal Transportation Road	About 500m
20-May-23	Karlikachar Village	191	91	42	17.45	20.8	External Coal Transportation Road	About 500m
20-May-23	KAN-1 Near Coal Sampling Lab	202	95	46	13.40	19.02	Railway Siding, Transportation	About 500m
20-May-23	Garjanbahal Village	186	88	40	11.14	13.33	External Coal Transportation Road	About 500m

Project :**Kulda OCP****(conc. in µg/cu.m.)**

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
06-May-23	External CT Road, Barpali	179	86	37	18.65	14.98	Mining Activities, Coal Transportation	About 500m
20-May-23	External CT Road, Barpali	192	89	41	16.78	18.26	Mining Activities, Coal Transportation	About 500m

MoEF Standards Notification dated 25th September, 2000

500 250 120 120

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Test Report

AMBIENT AIR QUALITY DATA

Area : **Basundhara**

(Reference Station)

Project :

Kulda OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
04-May-23	South West of Working Face, Chakarpur	161	81	30	12.52	16.58	Village Road	About 500m
04-May-23	North of CHP, Teleimal	163	82	31	16.94	20.25	Domestic, OCP, Transportation	About 500m
04-May-23	Bilaimunda Village	137	60	22	13.41	11.89	Domestic	About 500m
05-May-23	Bilaimunda Village	146	65	25	15.65	19.56	Domestic	About 500m
05-May-23	North of CHP, Teleimal	149	68	26	17.89	22.56	Domestic, OCP, Transportation	About 500m
05-May-23	South West of Working Face, Chakarpur	156	74	28	11.56	18.59	Village Road	About 500m
10-May-23	Bilaimunda Village	153	71	27	12.56	14.59	Domestic	About 500m
10-May-23	North of CHP, Teleimal	140	62	23	17.25	14.56	Domestic, OCP, Transportation	About 500m
10-May-23	South West of Working Face, Chakarpur	164	84	32	13.56	19.56	Village Road	About 500m
11-May-23	South West of Working Face, Chakarpur	147	66	25	12.56	14.56	Village Road	About 500m
11-May-23	Bilaimunda Village	162	79	30	15.42	19.88	Domestic	About 500m
11-May-23	North of CHP, Teleimal	138	59	22	14.06	18.65	Domestic, OCP, Transportation	About 500m
18-May-23	South West of Working Face, Chakarpur	150	67	26	14.05	13.24	Village Road	About 800m
18-May-23	Bilaimunda Village	165	82	33	14.8	16.44	Village Road	About 500m
18-May-23	North of CHP, Teleimal	158	76	29	13.85	17.49	Domestic, OCP, Transportation	About 500m
19-May-23	North of CHP, Teleimal	166	82	33	13.61	13.22	Domestic, OCP, Transportation	About 500m
19-May-23	South West of Working Face, Chakarpur	138	60	22	13.58	15.4	Village Road	About 800m

*NAAQS, 2009

100	60	80	80
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

19-May-23	Bilaimunda Village	162	80	31	13.38	16.27	Village Road	About 500m
24-May-23	Bilaimunda Village	154	71	27	15.27	19.79	Village Road	About 500m
24-May-23	North of CHP, Teleimal	161	78	30	10.35	14.16	Domestic, OCP, Transportation	About 500m
24-May-23	South West of Working Face, Chakarpur	169	82	34	14.01	18.15	Village Road	About 800m
25-May-23	South West of Working Face, Chakarpur	176	84	36	12.05	14.84	Village Road	About 800m
25-May-23	Bilaimunda Village	146	65	25	16.10	14.95	Village Road	About 500m
25-May-23	North of CHP, Teleimal	206	96	48	13.49	17.07	Domestic, OCP, Transportation	About 500m

NAQS, 2009

	100	60	80	80
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Basundhara

(Reference Station)

Project :

Garjanbahal OCP

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
04-May-23	West of working face, Bihaimunda	150	67	26	15.55	14.57	South-West of Working Face	About 500m
04-May-23	South-East of Working Face, Kutabaga	138	60	22	12.51	18.98	South-East of Working Face	About 500m
05-May-23	South-East of Working Face, Kutabaga	146	66	25	12.66	16.52	South-East of Working Face	About 500m
05-May-23	West of working face, Bihaimunda	155	73	28	12.54	13.56	South-West of Working Face	About 500m
10-May-23	West of working face, Bihaimunda	141	62	23	12.56	16.58	South-West of Working Face	About 500m
10-May-23	South-East of Working Face, Kutabaga	161	74	30	15.69	17.54	South-East of Working Face	About 500m
11-May-23	West of working face, Bihaimunda	150	69	26	15.65	18.32	South-West of Working Face	About 500m
11-May-23	South-East of Working Face, Kutabaga	137	62	32	12.28	13.85	South-East of Working Face	About 500m
18-May-23	West of working face, Bihaimunda	144	63	24	13.13	13.28	South-West of Working Face	About 500m
18-May-23	South-East of Working Face, Kutabaga	162	80	30	16.47	12.07	South-East of Working Face	About 100m
19-May-23	West of working face, Bihaimunda	163	79	30	15.15	17.76	South-West of Working Face	About 500m
19-May-23	South-East of Working Face, Kutabaga	143	63	24	10.97	14.22	South-East of Working Face	About 100m
24-May-23	South-East of Working Face, Kutabaga	138	61	22	15.03	16.9	South-East of Working Face	About 100m
24-May-23	West of working face, Bihaimunda	147	66	25	13.95	15.73	South-West of Working Face	About 100m
25-May-23	West of working face, Bihaimunda	156	74	28	17.57	14.01	South-West of Working Face	About 100m
25-May-23	South-East of Working Face, Kutabaga	150	68	26	13.04	18.2	South-East of Working Face	About 100m

*NAAQS-2009

100	60	80	80
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Kulda OCP					
Monitoring Station	Bihaimunda Village/ South west of working face (Reported only)					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
25-May-23	<20.0	5.31	<0.1	<1.0	<1.0	0.3
24-May-23	<20.0	4.65	<0.1	<1.0	<1.0	0.2
19-May-23	<20.0	4.69	<0.1	<1.0	<1.0	0.2
18-May-23	<20.0	4.36	<0.1	<1.0	<1.0	0.2
11-May-23	<20.0	6.47	<0.1	<1.0	<1.0	0.1
10-May-23	<20.0	4.98	<0.1	<1.0	<1.0	0.3
05-May-23	<20.0	7.84	<0.1	<1.0	<1.0	0.2
04-May-23	<20.0	7.77	<0.1	<1.0	<1.0	0.1
Standard	400(24 hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)	04(1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Kulda OCP					
Monitoring Station	North of CHP					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
25-May-23	<20.0	4.63	<0.1	<1.0	<1.0	0.1
24-May-23	<20.0	5.64	<0.1	<1.0	<1.0	0.2
19-May-23	<20.0	7.01	<0.1	<1.0	<1.0	0.2
18-May-23	<20.0	5.1	<0.1	<1.0	<1.0	0.1
11-May-23	<20.0	6.48	<0.1	<1.0	<1.0	0.3
10-May-23	<20.0	4.58	<0.1	<1.0	<1.0	0.2
05-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.1
04-May-23	<20.0	6.44	<0.1	<1.0	<1.0	0.2
Standard	400 24hours	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Kulda OCP					
Monitoring Station	South West of Working Face, Chakrapur					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
25-May-23	<20.0	7.01	<0.1	<1.0	<1.0	0.1
24-May-23	<20.0	5.21	<0.1	<1.0	<1.0	0.2
19-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.2
18-May-23	<20.0	7.21	<0.1	<1.0	<1.0	0.3
11-May-23	<20.0	5.54	<0.1	<1.0	<1.0	0.1
10-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.2
05-May-23	<20.0	6.94	<0.1	<1.0	<1.0	0.1
04-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.2
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Garjanbahal OCP					
Monitoring Station	Kutabaga Village/ South East of Working Face					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
25-May-23	<20.0	7.21	<0.1	<1.0	<1.0	0.1
24-May-23	<20.0	5.21	<0.1	<1.0	<1.0	0.1
19-May-23	<20.0	6.02	<0.1	<1.0	<1.0	0.3
18-May-23	<20.0	5.12	<0.1	<1.0	<1.0	0.2
11-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.2
10-May-23	<20.0	5.31	<0.1	<1.0	<1.0	0.3
05-May-23	<20.0	4.99	<0.1	<1.0	<1.0	0.1
04-May-23	<20.0	6.34	<0.1	<1.0	<1.0	0.2
Standard	400(24hours)	180(hour)	1.0(24hours)	6.0(Annual)	20(Annual)	04(1hours)


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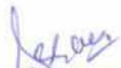
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Basundhara

Project	Garjanbahal OCP					
Monitoring Station	Bihaimunda Village/ South west of working face					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
25-May-23	<20.0	5.31	<0.1	<1.0	<1.0	0.3
24-May-23	<20.0	4.65	<0.1	<1.0	<1.0	0.2
19-May-23	<20.0	4.69	<0.1	<1.0	<1.0	0.2
18-May-23	<20.0	4.36	<0.1	<1.0	<1.0	0.2
11-May-23	<20.0	6.47	<0.1	<1.0	<1.0	0.1
10-May-23	<20.0	4.98	<0.1	<1.0	<1.0	0.3
05-May-23	<20.0	7.84	<0.1	<1.0	<1.0	0.2
04-May-23	<20.0	7.77	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20(Annual)	04 (1hours)


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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Basundhara

PROJECT :

Kulda OCP

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
11-May-23	External CT Road	62.4	57.2
11-May-23	North of CHP	63.6	59.4
19-May-23	External CT Road	65.4	62.7
19-May-23	North of CHP	63.4	60.9

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)


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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Basundhara

PROJECT :

Garjanbahal OCP


DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
11-May-23	Garjanbahal Village	62.6	59.4
11-May-23	Karlikachar Village	61.3	57.2
19-May-23	Garjanbahal Village	67.4	64.3
19-May-23	Karlikachar Village	65.7	62.1

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)


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TABLE--

EFFLUENT QUALITY DATA

Area :

Basundhara

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Garjanbahal OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
11-May-23	Mine Sump Water	7.62	<4.0	22	20	-	-	-	
11-May-23	Inlet of Settling Tank (Kanika Siding)	7.41	<4.0	48	36	-	-	-	
11-May-23	Outlet of Settling Tank (Kanika Siding)	7.57	<4.0	36	24	-	-	-	
25-May-23	Mine Sump Water	7.66	<4.0	26	16				
25-May-23	Outlet of Settling Tank (Kanika Siding)	7.74	<4.0	30	32				
25-May-23	Inlet of Settling Tank (Kanika Siding)	7.59	<4.0	24	20				

Project :

Kulda OCP

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
11-May-23	Final Outlet Of ETP	8.07	<4.0	24	32	-	-	-	
11-May-23	Inlet of ETP	7.96	<4.0	38	40	-	-	-	
11-May-23	Mine Sump Water Near Kulda Nursery	7.98	<4.0	20	16	-	-	-	
25-May-23	Mine Sump Water near Kulda Nursery	7.82	<4.0	24	20				
25-May-23	Final Outlet of ETP	7.92	<4.0	30	24				
25-May-23	Inlet of ETP	7.76	<4.0	44	32				

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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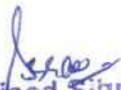


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Drinking Water Quality Data Basundhara Area

Project / OCP	Kulda OCP		Indian Drinking Standards (IS-10500):2012	
	Well at Sahaspur	Well at Teleimal	Acceptable	Permissible
Date of Sampling	11-May-2023	11-May-2023	Acceptable	Permissible
Colour(Hazen)	3	1	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	5
pH	7.67	7.83	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	129.3	102.6	200	600
Total Hardness (Ca CO ₃)(mg/L)	225	92	200	600
Iron(mg/L)	<0.1	<0.2	1.0	No relaxation
Chloride(mg/L)	87.21	11.89	250	1000
Total Dissolve Solid(mg/L)	298	194	500	2000
Calcium(mg/L)	50.10	22.63	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.45	0.1	0.3
Sulphate(mg/L)	9.49	14.05	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.13	0.08	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation


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Drinking Water Quality Data Basundhara Area

Project / OCP Monitoring Station	Garjanbahal OCP		Indian Drinking Standards (IS-10500):2012	
	Well at Garjanbahal Village	South West of Coal face, Bihaimunda	Acceptable	Permissible
Date of Sampling	11-May-2023	11-May-2023	Acceptable	Permissible
Colour(Hazen)	3	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	5
pH	7.97	7.97	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	151.6	75.8	200	600
Total Hardness (Ca CO ₃)(mg/L)	193	100	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	17.83	17.83	250	1000
Total Dissolve Solid(mg/L)	262	166	500	2000
Calcium(mg/L)	50.10	12.93	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	26.84	24.94	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.06	0.22	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent		
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation


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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Basundhara

Project:

Garjanbahal OCP


Date of Sampling	Name of the Station	Ground Levels (in meter)
5/30/2023	Piezometer No MIP 01; Village Garjanbahal (Village School Campus)(Reported only) Latitude 22 °0'41" N Longitude 83 ° 45'52" E	43
5/30/2023	Piezometer No MIP 11; Village Karlikachar; Infront of Primary School.(Reported only) Latitude 22.013755 N Longitude 83.745114 E	Pump fitted depth could not be measured

Project:

Kulda OCP

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/30/2023	Piezometer No MIP 12; Village Balinga; MCL Office. Latitude 22 ° 1'59 " N Longitude 83°45'15" E	2.40
5/30/2023	Piezometer No MIP 11; Village Karlikachar; Infront of Primary School. Latitude 22.013755 N Longitude 83.745114 E	Pump fitted , depth could not be measured
5/30/2023	Piezometer No MIP 01; Village Garjanbahal (Village School Campus)Latitude 22 °0'41" N Longitude 83 ° 45'52" E	43
5/30/2023	Piezometer No MIP 14; Village Kulda; Primary School Campus. Latitude 22 ° 1'55" N Longitude 83°43'47" E	Demolished


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TABLE--

Well Water Level Monitoring Data

Area :

Basundhara

Project


Garjanbahal OCP


<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
25-May-23	Well at Garjanbahal Village	2.95
25-May-23	South West of Coal face	3.15

Project

Kulda OCP

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
25-May-23	Well at Sahaspur	2.82
25-May-23	Well at Teleimal	2.82


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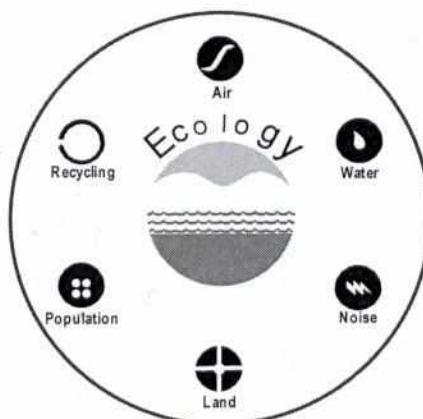

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**Environmental Monitoring Report
Of
Orient Area
For
May-2023**

Ib Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 1 & 2

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
15-May-23	Orient Mine No. 1 & 2	189	93	42	10.21	15.62	Coal Stock Yard, Surface Bunker, Coal	About 250m
31-May-23	Orient Mine No. 1 & 2	204	95	47	10.55	17	Coal Stock Yard, Surface Bunker, Coal Transport	About 250m

MoEF Standards Notification dated 25th September, 2000

500

250

120

120

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19/05/23
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 3

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
15-May-23	Orient Mine No. 3	201	98	46	10.88	16.58	Coal Stockyard, Surface Bunker, Coal	About 200m
31-May-23	Orient Mine No. 3	196	93	45	11.47	17.34	Coal Stockyard, Surface Bunker, Coal Transport	About 200m

MoEF Standards Notification dated 25th September, 2000

500	250		120	120
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Test Report

AMBIENT AIR QUALITY DATA

Area :

Orient

(Reference Station)

Project :

Orient Mine No.1 & 2

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
02-May-23	VIP Guest House, IB Valley (Reported)	155	73	28	15.98	18.54	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
03-May-23	VIP Guest House, IB Valley (Reported)	150	65	26	14.52	16.87	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
08-May-23	VIP Guest House, IB Valley (Reported)	135	56	20	12.5	17.58	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
09-May-23	VIP Guest House, IB Valley (Reported)	141	60	23	11.54	14.98	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
16-May-23	VIP Guest House, IB Valley (Reported)	162	78	30	17.74	18.22	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
17-May-23	VIP Guest House, IB Valley (Reported)	165	82	32	14.24	13.13	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
22-May-23	VIP Guest House, IB Valley (Reported)	141	61	23	17.69	12.51	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m
23-May-23	VIP Guest House, IB Valley (Reported)	144	63	24	15.76	16.67	Coal Stock Yard, Surface Bunker, Coal Transportation	About 500m

*N/AQS.2009

100	60	80	80
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AMBIENT AIR QUALITY DATA

Area :

Orient

(Compliance Station)

Project :

Orient Mine No. 4

(conc. in $\mu\text{g}/\text{cu.m.}$)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
15-May-23	Orient Mine No. 4	206	98	49	13.56	18.54	Coal Transportation Road	About 300m
31-May-23	Orient Mine No. 4	212	98	52	15.21	19.02	Coal Transportation Road	About 300m

MoEF Standards Notification dated 25th September, 2000

500	250		120	120
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AMBIENT AIR QUALITY DATA

Area : **Orient** (Compliance Station)

Project : **HBI Mine** (conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source	Distance from DGS
15-May-23	HBI Mine	196	95	44	17.58	21.52	Coal Stockyard, Surface Bunker, Coal Transport	About 100m
15-May-23	Bundia Colony Pump House	185	90	39	15.88	17.56	Coal Stockyard, Surface Bunker, Coal Transport	About 150m
31-May-23	HBI Mine	208	97	49	12.55	14.07	Coal Stockyard, Surface Bunker, Coal Transport	About 100m
31-May-23	Bundia Colony Pump House	178	87	38	11.44	14.08	Coal Stockyard, Surface Bunker, Coal Transport	About 150m

MoEF Standards Notification dated 25th September, 2000

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AMBIENT AIR QUALITY DATA

Area :

Orient

(Reference Station)

Project :

Hirakand Bundia Mine (HBM)

(conc. in µg/cu.m.)

Date of Sampling	Monitoring Station	SPM	PM10	PM2.5	SO2	NOx	Dust Generating Source(DGS)	Distance from DGS
02-May-23	Rampur Sub Area	162	81	30	16.59	22.58	Coal Stock And CT Road	About 1000m
02-May-23	Rampur Officers Guest House	149	66	26	12.69	18.65	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
03-May-23	Rampur Officers Guest House	153	71	27	13.55	17.85	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
03-May-23	Rampur Sub Area	149	68	26	10.25	16.32	Coal Stock And CT Road	About 1000m
08-May-23	Rampur Sub Area	155	73	28	17.58	16.58	Coal Stock And CT Road	About 1000m
08-May-23	Rampur Officers Guest House	162	80	30	12.2	16.32	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
09-May-23	Rampur Sub Area	159	75	29	11.56	16.85	Coal Stock And CT Road	About 1000m
09-May-23	Rampur Officers Guest House	143	63	24	15.93	19.73	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
16-May-23	Rampur Sub Area	166	82	33	14.95	20.09	Coal Stock And CT Road	About 1000m
17-May-23	Rampur Sub Area	162	79	30	13.56	14.64	Coal Stock And CT Road	About 1000m
22-May-23	Rampur Sub Area	155	75	28	11.93	22.62	Coal Stock And CT Road	About 1000m
22-May-23	Rampur Officers Guest House	143	64	24	12.30	10.85	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
23-May-23	Rampur Sub Area	153	72	27	12.04	15.53	Coal Stock And CT Road	About 1000m
23-May-23	Rampur Officers Guest House	141	62	23	13.02	16.93	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
29-May-23	Rampur Officers Guest House	153	71	27	12.79	15.52	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
29-May-23	Rampur Sub Area	137	58	21	17.41	18.29	Coal Stock And CT Road	About 1000m
30-May-23	Rampur Sub Area	146	66	25	13.53	12.84	Coal Stock And CT Road	About 1000m

*NAAQS 2009

100 60 80 80

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AMBIENT AIR QUALITY DATA

Area :

Orient

(Reference Station)

30-May-23	Rampur Officers Guest House	146	66	25	12.36	12.03	Coal Stockyard, Surface Bunker, Coal Transport	About 1000m
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IS:14103:2009		100	60	80	80
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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Orient

Project	HBI Mine					
Monitoring Station	Rampur Officers Guest House					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	5.32	<0.1	<1.0	<1.0	0.3
29-May-23	<20.0	6.32	<0.1	<1.0	<1.0	0.3
23-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.2
22-May-23	<20.0	4.62	<0.1	<1.0	<1.0	0.1
09-May-23	<20.0	5.62	<0.1	<1.0	<1.0	0.3
08-May-23	<20.0	4.31	<0.1	<1.0	<1.0	0.1
03-May-23	<20.0	5.21	<0.1	<1.0	<1.0	0.3
02-May-23	<20.0	6.12	<0.1	<1.0	<1.0	0.3
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Orient

Project	HBI Mine					
Monitoring Station	Rampur Sub Area					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	($\mu\text{g}/\text{m}^3$)	(ng/m^3)	(ng/m^3)	(mg/m^3)
30-May-23	<20.0	5.25	<0.1	<1.0	<1.0	0.2
29-May-23	<20.0	4.62	<0.1	<1.0	<1.0	0.1
23-May-23	<20.0	5.94	<0.1	<1.0	<1.0	0.3
22-May-23	<20.0	5.97	<0.1	<1.0	<1.0	0.2
17-May-23	<20.0	3.97	<0.1	<1.0	<1.0	0.1
16-May-23	<20.0	4.29	<0.1	<1.0	<1.0	0.2
9-May-23	<20.0	6.31	<0.1	<1.0	<1.0	0.3
8-May-23	<20.0	4.32	<0.1	<1.0	<1.0	0.1
3-May-23	<20.0	4.56	<0.1	<1.0	<1.0	0.3
2-May-23	<20.0	6.21	<0.1	<1.0	<1.0	0.1
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 (Annual)	20 (Annual)	04 (1hours)


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AMBIENT AIR QUALITY DATA (NAAQS PARAMETER)

Area: Orient

Project	Orient Mine No.2					
Monitoring Station	VIP Guest House, IB Valley (Reported Only)					
Date of sampling	Ammonia (NH ₃)	Ozone (O ₃)	Lead (Pb)	Arsenic (As)	Nickel (Ni)	CO
	(µg/m ³)	(µg/m ³)	(µg/m ³)	(ng/m ³)	(ng/m ³)	(mg/m ³)
23-May-23	<20.0	4.65	<0.1	<1.0	<1.0	0.2
22-May-23	<20.0	5.42	<0.1	<1.0	<1.0	0.1
17-May-23	<20.0	4.16	<0.1	<1.0	<1.0	0.2
16-May-23	<20.0	4.12	<0.1	<1.0	<1.0	0.2
9-May-23	<20.0	5.01	<0.1	<1.0	<1.0	0.3
8-May-23	<20.0	5.78	<0.1	<1.0	<1.0	0.2
3-May-23	<20.0	6.66	<0.1	<1.0	<1.0	0.1
2-May-23	<20.0	6.14	<0.1	<1.0	<1.0	0.3
Standard	400 (24hours)	180 (hour)	1.0 (24hours)	6.0 Annual)	20 (Annual)	04 (1hours)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No. 1 & 2

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-May-23	Orient Mine No. 1 & 2	64.3	60.9
09-May-23	VIP Guest House, IB Valley (Reported Only)	64.3	60.9
17-May-23	VIP Guest House, IB Valley (Reported Only)	65.3	62.6
20-May-23	Orient Mine No. 1 & 2	68.9	65.7

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.3

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-May-23	Orient Mine No.3	62.4	57.6
20-May-23	Orient Mine No.3	64.7	60.3

MoEF Standard Notification dated 25th September, 2000	6.00 AM -10.00 PM Leq 75dB(A)	10.00 PM -6.00 AM Leq 70dB(A)
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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.4

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-May-23	Orient Mine No.4	64.3	61.2
20-May-23	Orient Mine No.4	65.1	63.7

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :


HBI Mine

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
09-May-23	Rampur Sub Area (Reported)	62.4	58.3
09-May-23	HBI Mine	64.8	61.2
09-May-23	Bundia Colony Pump House	62.6	59.8
09-May-23	Rampur Officer's Guest House	63.7	57.3
17-May-23	Rampur Sub Area (Reported)	63.8	60.7
20-May-23	HBI Mine	68.9	66.7
20-May-23	Bundia Colony Pump House	64.3	62.9
20-May-23	Rampur Officer's Guest House	66.7	63.4

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)


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TABLE--

NOISE LEVEL MONITORING DATA

AREA :

Orient

PROJECT :

Orient Mine No.4

DATE OF SAMPLING	STATION	Noise Level Measurement in Leq dB(A)	
		DAY	NIGHT
05-Apr-23	Orient Mine No.4	68.4	66.7
19-Apr-23	Orient Mine No.4	69.4	67.5

M/S. Orient

MoEF Standard Notification dated 25th September, 2000

6.00 AM -10.00 PM
Leq 75dB(A)

10.00 PM -6.00 AM
Leq 70dB(A)

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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Orient Mine No. 1 & 2

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Mine Sump of Mine No. 2	7.36	<4.0	30	32	-	-	-	
23-May-23	Mine Sump of Mine No. 2	7.49	<4.0	36	28				

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Orient Mine No. 3

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Mine Sump of Mine No. 3	7.18	<4.0	40	36	-	-	-	
23-May-23	Mine Sump of Mine No. 3	7.33	<4.0	32	40				

<i>MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents</i>	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

Orient Mine No. 4

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Mine Sump of Mine No. 4	7.07	<4.0	22	28	-	-	-	
23-May-23	Mine Sump of Mine No. 4	7.36	<4.0	28	36				

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents	5.5-9.0	10	100	250	30
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TABLE--

EFFLUENT QUALITY DATA

Area :

Orient

(All dimensions are in mg/l unless otherwise stated except pH)

Project :

HBI Mine

Date of Sampling	Sampling Station	pH	Oil & Grease	TSS	COD	BOD	TDS	DO	Remarks
09-May-23	Mine Sump of HBM	7.26	<4.0	44	40	-	-	-	
23-May-23	Mine Sump of HBM	7.19	<4.0	38	32				

MoEF Standard Notification dated 25th September, 2000 and MoEF Schedule VI, General standard for discharge of Environmental Pollutants Part A: Effluents

5.5-9.0	10	100	250	30
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Drinking Water Quality Data Orient Area

Project / OCP	Orient Mine No. 1 & 2		Indian Drinking Standards (IS-10500):2012	
	Budhijaam Colony	Mine no 1 & 2 Filter Plant		
Date of Sampling	9-May-2023	9-May-2023	Acceptable	Permissible
Colour(Hazen)	1	4	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	3	1	5
pH	7.69	7.87	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	89.2	71.4	200	600
Total Hardness (Ca CO ₃)(mg/L)	84	88	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	25.77	23.78	250	1000
Total Dissolve Solid(mg/L)	208	178	500	2000
Calcium(mg/L)	24.24	27.47	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	35.28	26.46	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.28	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation

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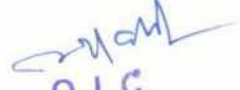
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Drinking Water Quality Data Orient Area

Project / OCP	Orient Mine No. 3	Indian Drinking Standards (IS-10500):2012	
Monitoring Station	Mine no 3 Filter Plant	Acceptable	Permissible
Date of Sampling	9-May-2023	Acceptable	Permissible
Colour(Hazen)	3	5	15
Odour	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	1	5
pH	7.42	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	102.6	200	600
Total Hardness (Ca CO ₃)(mg/L)	96	200	600
Iron(mg/L)	<0.1	1.0	No relaxation
Chloride(mg/L)	35.7	250	1000
Total Dissolve Solid(mg/L)	220	500	2000
Calcium(mg/L)	30.71	75	200
Copper(mg/L)	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	0.1	0.3
Sulphate(mg/L)	16.28	200	400
Nitrate(mg/L)	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	1	1.5
Arsenic(mg/L)	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	0.01	No relaxation
Zinc(mg/L)	0.14	5	15
Total Chromium (mg/L)	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	0.01	No relaxation


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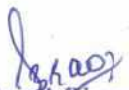



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Drinking Water Quality Data Orient Area

Project / OCP	HBI Mine		Indian Drinking Standards (IS-10500):2012	
	Rampur Colony	HBI Water Filter Plant		
Monitoring Station				
Date of Sampling	9-May-2023	9-May-2023	Acceptable	Permissible
Colour(Hazen)	3	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	3	1	5
pH	7.73	7.59	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	133.8	120.4	200	600
Total Hardness (Ca CO ₃)(mg/L)	120	100	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	29.73	21.80	250	1000
Total Dissolve Solid(mg/L)	232	202	500	2000
Calcium(mg/L)	30.71	29.09	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	7	3.56	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	0.15	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation


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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Orinet

Project:

Orient Mine No. 1 & 2

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/31/2023	Piezometer No MIP 03; Beside Ib Valley GM House. Latitude 21.85446 N Longitude 83.926961 E	5.0

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Test Report

GROUND WATER LEVEL MONITORING DATA

Area:

Orinet

Project:

Orient Mine No. 3

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/31/2023	Piezometer No MIP 05; Village Chauliberna; Inside Nursing high School Campus Latitude 21°49'4" N Longitude 83°52'43"E	35

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Test Report

GROUND WATER LEVEL MONITORING DATA


Area:


Orient

Project:

HBI

Date of Sampling	Name of the Station	Ground Levels (in meter)
5/31/2023	Piezometer No MIP 05; Village Chauliberna; Inside Nursing High School Campus (Reported only) Latitude 21°49'4" N Longitude 83°52'43"E	35


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TABLE--

Well Water Level Monitoring Data

Area :

Orient

Project


Orient mine no. 2

Date of sampling	Name of the Station	Depth to Water Level (in m. bgl)
23-May-23	Madhuban Nagar Well Water	4.19

Project

Orient mine no. 2

Date of sampling	Name of the Station	Depth to Water Level (in m. bgl)
24-May-23	Chaulibera Village Well Water (Reported)	2.87


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TABLE--

Well Water Level Monitoring Data


Area :


Orient

Project

Orient mine no. 3

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
23-May-23	Well of Lajkura	4.78


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TABLE--

Well Water Level Monitoring Data

Area :


Orient

Project

HBI

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
23-May-23	Kudopali Village Well (Reported Only)	3.25
23-May-23	Ainlapali Village Well	4.78
23-May-23	Chingriguda Village Well	2.57


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TABLE--

Well Water Level Monitoring Data

Area :

Orient

Project

Orient mine no. 4

<i>Date of sampling</i>	<i>Name of the Station</i>	<i>Depth to Water Level (in m. bgl)</i>
23-May-23	Jhopadi Basti Villge Well	4.04
23-May-23	Adibasi Basti Villge Well	2.69

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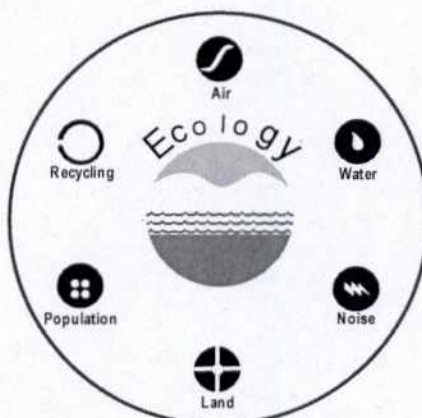
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**Environmental Monitoring Report
Of
MCL HQ
For
May-2023**

IB Valley Coalfield



Mahanadi Coalfields Limited



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Central Mine Planning & Design Institute Ltd.
(A Subsidiary of Coal India Ltd.)

Regional Institute-VII, Samantpuri, P.O : RRL, Bhubaneswar-751013 (Odisha)
[Assistance from Environment Division, CMPDI(HQs), Ranchi]

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Drinking Water Quality Data MCL (HQ)

Project / OCP Monitoring Station	MCL (HQ)		Indian Drinking Standards (IS-10500):2012	
	DAV School (Anand vihar)	Corporate Office (Jagrati Vihar)	Acceptable	Permissible
Date of Sampling	12-May-2023	12-May-2023	Acceptable	Permissible
Colour(Hazen)	3	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	2	2	1	5
pH	7.91	7.55	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	107	111.5	200	600
Total Hardness (Ca CO ₃)(mg/L)	92	104	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	15.85	17.84	250	1000
Total Dissolve Solid(mg/L)	194	216	500	2000
Calcium(mg/L)	30.71	35.55	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	17.36	17.64	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation


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Drinking Water Quality Data MCL (HQ)

Project / OCP	MCL(HQ)		Indian Drinking Standards (IS-10500):2012	
	Inlet to Water Treatment Plant (Anand Vihar)	Outlet to Water Treatment Plant (Anand Vihar)	Acceptable	Permissible
Monitoring Station				
Date of Sampling	12-May-2023	12-May-2023	Acceptable	Permissible
Colour(Hazen)	1	2	5	15
Odour	Agreeable	Agreeable	Agreeable	Agreeable
Taste	Agreeable	Agreeable	Agreeable	Agreeable
Turbidity(NTU)	1	1	1	5
pH	7.46	7.52	6.5-8.5	No relaxation
Total Alkalinity(mg/L)	82.03	71.4	200	600
Total Hardness (Ca CO ₃)(mg/L)	60	52	200	600
Iron(mg/L)	<0.1	<0.1	1.0	No relaxation
Chloride(mg/L)	17.84	19.8	250	1000
Total Dissolve Solid(mg/L)	158	164	500	2000
Calcium(mg/L)	8.03	16.16	75	200
Copper(mg/L)	<0.03	<0.03	0.05	1.5
Manganese(mg/L)	<0.04	<0.04	0.1	0.3
Sulphate(mg/L)	12.48	14.72	200	400
Nitrate(mg/L)	<2.0	<2.0	45	No relaxation
Fluoride(mg/L)	<0.3	<0.3	1	1.5
Arsenic(mg/L)	<0.005	<0.005	0.01	No relaxation
Lead(mg/L)	<0.005	<0.005	0.01	No relaxation
Zinc(mg/L)	<0.04	<0.04	5	15
Total Chromium (mg/L)	<0.01	<0.01	0.05	No relaxation
Boron(mg/L)	<0.2	<0.2	0.5	2.4
Cadmium(mg/L)	<0.001	<0.001	0.003	No relaxation
MPN (Index/100 ml)	Absent	Absent	-	-
Residual Free Chlorine(mg/L)	<0.2	<0.2	0.2	1.0
Phenolics(mg/L)	<0.001	<0.001	0.001	0.002
Selenium(mg/L)	<0.005	<0.005	0.01	No relaxation


Authorised Signatory
CMPDI, RI-VII, LAB
BHUBANESWAR


O. I. C.
Env. Lab
CMPDI, RI-VI:
Bhubaneswar